MARCH, 1961

ARMED FORCES Management

PUBLISHED FOR THE MILITARY SERVICES OF THE FREE WORLD

Capt. Levering Smith: the "smartest scientist"

The Case for Reorganization . . . 18

Monsanto

Space-Age Project "RELIABLE"

A CHEMICAL EXPEDITION

ON

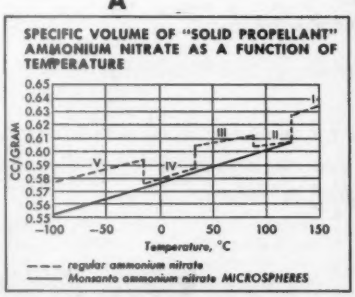
CIST

probing the chemistry of nitrogen compounds ...develops new oxidizers that improve the efficiency and reliability of solid propellants

Monsanto has developed "MICROSPHERES"—a new unique form of nitrate oxidizer that gives greater packing density, a more predictable burning pattern, and greater reliability to solid propellants. Most important, the oxidizer is low-cost, heat-stable, and forestalls cracking of the grain as the propellant mass burns.

By applying advanced technology in physical chemistry to the problems of nitrate oxidizers, Monsanto has developed ammonium nitrate MICROSPHERES for solid rocket propellants. MICROSPHERES have a lower coefficient of expansion and a *linear* expansion with heat to prevent cracking of the "grain" upon temperature change. This oxidizing system is outstanding for improving reliability of production-line low- and medium-thrust solid propellants.

A



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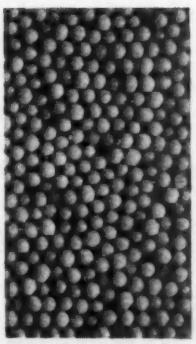

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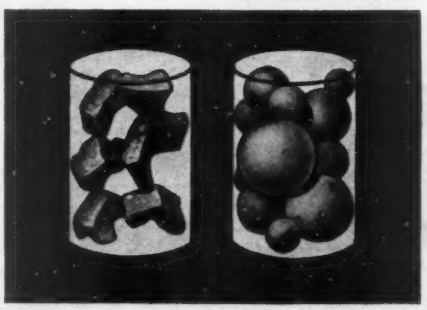

In contrast to high costs and handling hazards associated with other oxidizers, ammonium nitrate MICROSPHERES offer economy and safety. The new physical form increases the efficiency of the thrust and provides mechanical stability during manufacture, storage and burning.

Ammonium nitrate MICROSPHERES are an entirely new oxidizing entity for compounding solid propellants. Unlike ordinary ammonium nitrate, MICROSPHERES do not undergo expansion and contraction from crystalline phase changes, even with operational variation in temperature. (See Graph A.)

The MICROSPHERES make it possible to obtain a higher oxidizer loading for greater propellant efficiency. They are extremely dense. Small, round, and compact—MICROSPHERE particles each contain the greatest mass of chemical energy *per unit* of ammonium nitrate volume. (See Photo B.)

Tightly "packable"—the MICROSPHERES can provide the highest mass of chemical energy *per total volume* because graded sizes give the maximum density packing pattern. Even at a compound density of 1.72 grams per cc., ammonium nitrate MICROSPHERES can provide a *higher packing density* in the grain than commercial ammonium perchlorate at 1.95 grams per cc.!

Diagram C shows why and how MICROSPHERES pack to maximum density. On the left, approximately 34% void space results from using a five mode distribution of irregular-shaped oxidizer particles. On the right, only 15% void space remains with a five mode distribution of regular-shaped MICROSPHERES.

The volume relationship between round MICROSPHERES and irregular-shaped particles in mixed sizes remains approximately the same, regardless of the number of size ranges. Graded MICROSPHERE particle sizes, available in size distribution ranges that peak at 50, 200, and 300 mesh, offer maximum flexibility in controlling packing density. They effectively reduce volume to the minimum.

(Please turn page.)

With MICROSPHERES, less binder can be used to obtain better, more-reliable mechanical properties at a higher oxidizer loading. Unlike irregularly shaped particles, their smooth spherical shape does not cause areas of stress under "shaping" or burning deformation. They give better binder-to-oxidizer contact. With minimum plane-to-plane contact between particles, they greatly reduce the incidence of weak spots, cracking, and poor mechanical properties.

As a propellant oxidizer, ammonium nitrate MICROSPHERES offer many other benefits: good storage stability, safety from shock and thermal decomposition, uniform burning rate, smokeless exhaust, and low cost. Mixing of composite propellants is easier because their spherical shape reduces mass viscosity. They usually cut processing time and power input. MICROSPHERE grains are also easier to extrude or cast into the required geometric shapes.

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EDITORIAL

"Open Mouth, Closed Mind"

BACK IN AUGUST, former Defense Secretary Robert A. Lovett inadvertently opined some ground rules for participants in the Defense reorganization debate now looming—rules which apparently only the proponents of change have chosen to accept.

Said Lovett, in part, "Looking at the problem of national security with such calmness as I can muster, I cannot avoid the conclusion that world change has overtaken us and that, in a relatively few years, economic pressure alone will force us to re-examine our current organization and procedures.

"National security seems to me to be more complex than ever. I feel it is a problem we will have with us for generations to come and it is not helped in an open society by either an open mouth or a closed mind."

He added that it most certainly would not be solved by trotting out the tired old slogans about "reduction of civilian control" and the "man on horseback." (These he pointed out, are the same emotion jangling, throat choking ghosts first summoned up with appropriate tremors, by Army branch chiefs way back when Elihu Root first had the audacity to propose the establishment of a position of "Chief of Staff of the Army.")

Lovett's wrap-up: "The solution will be found, I suppose, when necessity or good judgment make it abundantly clear that in national security the whole is more important than its parts."

If he had waited a few months, his cutting contentions could have been backed up by an example-citing report card—on how well some of us have been wearing the mantle, lately, of dedicated devotion to *national* security. For in fact, a handful of overly eager minions have been allowing their cloaks to drag in the dust.

Their methods: The planned premature "leak" to our "friends in the press" of opinions on reorganization "proposals" not yet even outlined; the summoning up of "pals in high Congressional places" to lean on the Pentagon's new civilian hierarchy.

Such tactics by the "open mouth, closed mind" echelon only cloud the issues, endanger an intelligent, stable solution. Further, such connivery at this too-early date indicts the whole Pentagon population, in effect, for biased, power hungry, empire building—smear which only a picayune portion really deserves.

The opposition to organizational change (which is where most—but not all—of this under-the-table stuff is coming from) has some valid, logical points it should be making. However, at the rate some of their presumed representatives are chewing away at the problem's periphery, busily making "the lesser seem the greater cause," these points are being buried.

To quote the new U.S. Information Agency boss, Edward R. Murrow, "Awareness must precede reform."

Granted, the reorganization hassle is crammed with emotion. But the outcome is just as vital to national security as any conceivable hardware development—and demands, if we are to resolve it, the same sort of coldly analytical expert military testimony which any hardware program must survive.

This is hardly likely, current Pentagon in-fighting being what it is. And just as unfortunately, this flailing away at the nation's nerve ends makes many thinking men suspect it is what its practitioners say it is not: a frantic attempt to protect a few out-dated empires.

Bill Borklund

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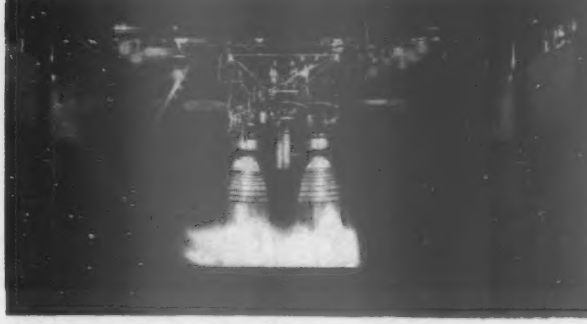

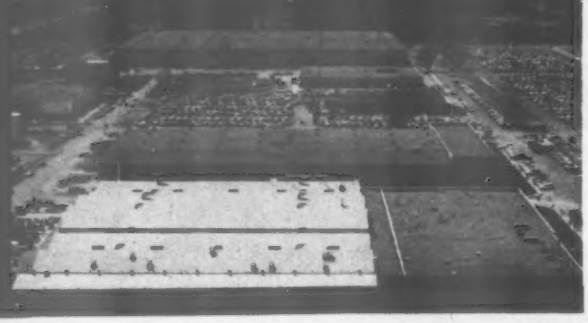

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Volume 7—No. 6

FEATURES

The Case for Reorganization 18

Whether Defense has achieved its objective of unification of the military services has been debated for more than a decade. Defense Secretary McNamara is going to find the answer and it may mean another shake-up in the Pentagon.

Where "The Team" Is in Trouble 22

Another of the AFM series on Defense-Industry team problems is discussed in this interview with Jack Blades, of American Machine and Foundry. He pins his chief difficulty on communications and tells why.

Pentagon Profile — This Month: Captain Levering Smith, USN .. 24

The Director of the Technical Division/Special Projects, Bureau of Weapons, Navy Department, is "the smartest scientist in uniform" in the opinion of his boss, Vice Admiral William F. Raborn.

Smith's course on Polaris: he assumed the project would be successful, he gave development engineers full responsibility, he ordered complete designs, he personally prepared his own operational plan.

What's Ahead for NATO 29

AFM correspondent Vandyk discussed this question with some of Europe's leading authorities. Here he presents the viewpoints of three outstanding French specialists on the principal issues facing the NATO organization.

"To Save a Dollar, Waste 20" 38

This special report on the Atlantic Missile Range at Cape Canaveral focuses attention on shortcomings in communications, instrumentation, data processing and range capacities. Improvements would save many times their costs in program progress.

How Naval Supply Stays on Top 47

Improvements in data transmission and cataloging are saving Navy Aviation time and money.

Are You An Administrator? 49

Lt. Col. Dan W. Hickox, of the Air Force Accounting and Finance Center, indicates some areas for improvement and lists what it takes to make a good administrator.

Need for Dynamic Leadership 50

An Armor officer, 1st Lt. Wm. C. Rousse, USA, says new weapons clinch the case for this quality.

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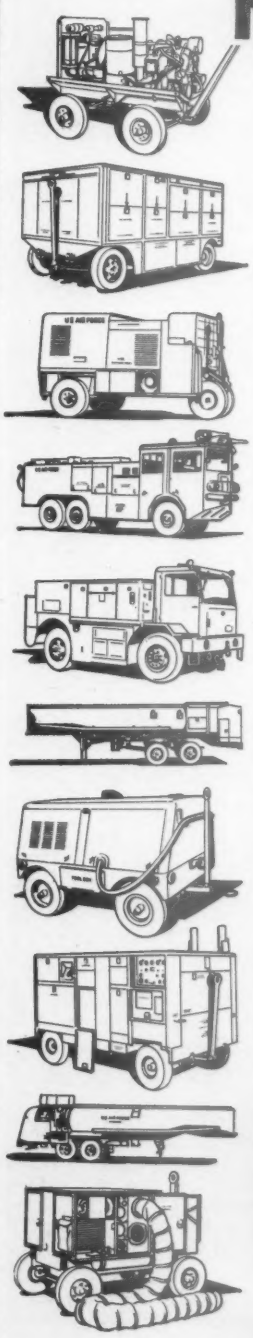
CONTINENTAL PACKETTE POWER *USE-PROVED* Round the Globe



Ground support equipment built around Packette power is proving itself today on defense installations all over the free world.

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In My Opinion

Erroneous? Postulates

The biggest error that I can see in your series of "Erroneous Postulates" was in your publishing them. If I could understand the articles or grasp their message, I would probably agree that they were at least scholarly, if not pedantic. Since I cannot, I can only confess bafflement and ask what sort of reader response you've gotten(?)

The good Colonel *must* be an old Manpower Officer.

Major Alan D. Briggs
U.S. Air Force

Comments anyone?—Ed.

Who Done It?

Re: the photograph of Lt. Gen. Arthur G. Trudeau which appeared on Page 28, Armed Forces Management, Vol. 7, No. 3, December 1960, either the negative was reversed when the photograph was printed, or General Trudeau hasn't as yet learned that decorations are worn on the left side of the uniform.

M. E. Colbert
Medical Information & Intelligence Agency

General Trudeau learned many years ago how decorations should be worn (see cover photo, AFM December 1960), rates tops in military appearance at the Pentagon, and is considered an authority on the subject. Not quite so sharp was the production man who reversed the photo cut before going to press. However, had your eye been as sharp as your wit, you would have noticed in the photo that the coat was buttoned on the wrong side. To please General Trudeau—among others—the error was corrected on reprints. —Ed.

Authors Take Note

In the past several months you have authorized Command and Staff College to reproduce a number of articles that have appeared in your periodical. Articles written by prominent authors appearing in publications such as yours are ideally suited for supporting our curriculum. They are of great help to the staff and faculty and of immeasurable value to the students of Command and Staff College.

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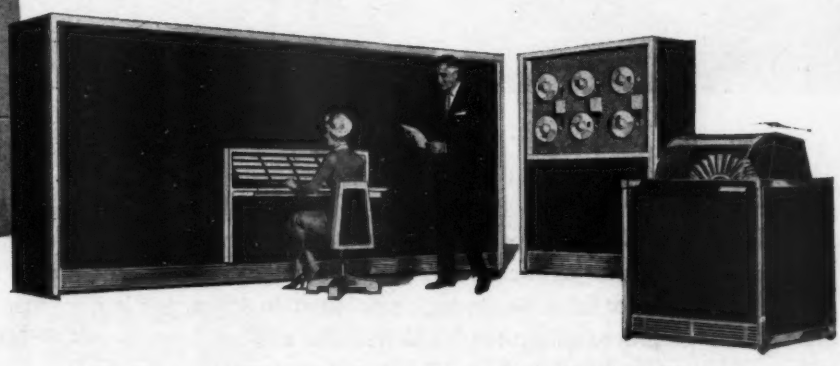

The call came from the United Nations. Within hours, huge airlifters were rushed to the Congo with hundreds of U.N. peace troops and tons of supplies. The Congo is a clear case in point why the free world must have hundreds of airlifters ready and able to go anywhere, any time — to a little war, a remote hunger spot, or for support of full-scale strategic retaliation. In Africa, and in more than three years of Air Force service, one big bird has proved ablest: the C-130 Hercules airlifter, made by LOCKHEED GEORGIA. The versatile C-130 is now operating, or being built, in 12 different configurations for the U.S. Air Force, Navy, Marine Corps, and Coast Guard—and for the air forces of several other free nations.

Urgent! Send big birds and helping hands

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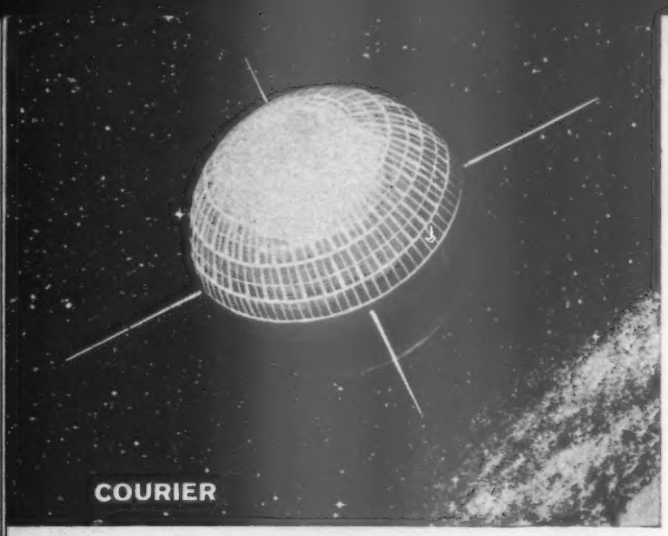

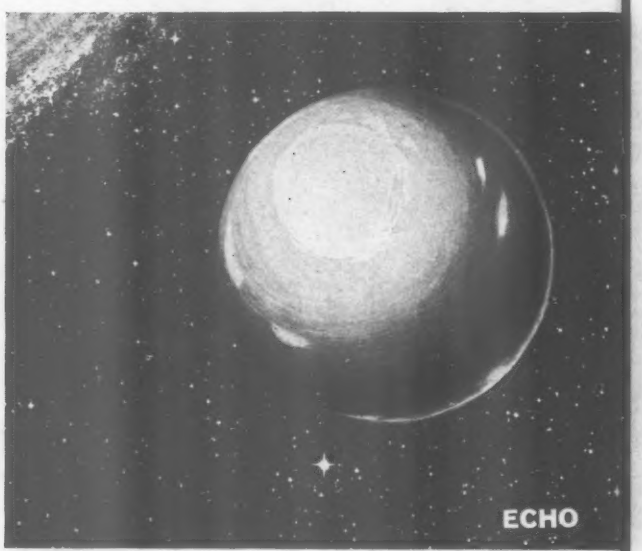

Philco Achievements in Space Technology

Philco has made many major contributions to the nation's vital space programs. COURIER, the world's first advanced communications satellite, was designed and built by Philco. Philco played a major role in the development and installation of the complex communications, command, tracking and data systems for the DISCOVERER program. Space-borne and ground communications systems for MIDAS and other satellites have been Philco designed. Philco developed and installed the tracking and receiving systems for the Air Force Passive Satellite Relay Link, which utilizes the ECHO satellite. In the field of human factors engineering, Philco has developed personnel subsystems for several major space projects. Philco also produces the world's largest 3-axis satellite tracking antennas.

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Washington Background

Flight Pay Bonus To Be Aired In Spring

Capital Hill headline hunters may make a political football out of the flight pay controversy, banging Air Force morale with a sledge hammer in the bargain. Congressional complaint that too many officers who shouldn't are receiving the flight pay "bonus" is due for an airing this Spring.

"Too much evidence" indicates hearings may turn into a vote seeking snarl much like the Hebert officer-hiring inquiry of a year and a half ago. Two points rankle flying officers: (1) as even the headline hunters know, in many cases flight pay "bonus" is an expedient to hold onto talent whose high-priority jobs are regularly and terrifically underpriced; (2) most of current "big cost" is due to World War II and Korea officer hump which will wipe itself within five years without any legislative assistance.

Even more to the point: cudgeling military morale could well cripple effectiveness. Air Force commanders (ARDC's General Schriever among them) have told headquarters such shenanigans would "tear the guts out of my command," reportedly documented their protests with key officer promises to resign if flight pay cancellation became effective.

NASA—What Lies In Store For The Agency

Military circles are growing considerably more insistent daily that the National Aeronautics and Space Administration serves no useful purpose. The rash of private military conversation on this theme leads many observers to expect that a formal recommendation may reach the White House soon.

Say the military: this "space for peaceful purposes idea," (and the apparent psychological reasons for its being set up through NASA originally), has been lost largely on world populations it was supposed to impress. And, they contend, NASA is only one more decision-delaying interface between military capability to produce the hardware or see that it is done (as the Air Force is in fact doing for NASA today, anyway) and the civilian administration at the top which decides which hardware will be ordered.

Solid Fuels Gain Favor For Space

Outstanding success by all three services in solid propellant fuel field has opened speculation that our first manned operational space ship will use the kick of a Saturn-like liquid propellant booster to get into space, use solid propellant fuels for steering out there and return to earth. Main reasons for solids: less complicated, less likely to have something go wrong, lack of plumbing requirements cuts down on "unprofitable" weight.

Also, "solids" successes have prompted many "experts" to assert elatedly that we are closing or have closed the "missile gap" —which just as many other "experts" say never existed anyway.

Shave Costs Or Else— For Defense

Reductions in the costs of the development and production of new weapons must be realized even though some overall increases in the defense spending are authorized. At the Pentagon, word is this dictum will mean hard new looks at maintenance outlays and reexamination of the contract structure, including awards by primes to subs.

THIS IS AN ENEMY BOMBER. NORTHROP BUILDS IT.

On a radar screen, the RP-76 target missile can look as big as the largest enemy bomber. Rocket powered, it flies faster than sound, operates above 70,000 feet. Yet this little giant is less than ten feet long, weighs just over 300 pounds, and parachutes down for re-use after completing its run. It is the heart of the Army's program for training the ground-to-air missile crews who guard our cities. The complete target and tracking system is made, managed and serviced for the Army by **RADIOPLANE** A DIVISION OF **NORTHROP**

Opening Radiant "Windows" to the Universe . . . Man's world has been compared to the inside of a dark room: his only view outside has been through a tiny window in the wall.

This analogy is accurate. Visible light, for example, is only about 3% of the entire electromagnetic spectrum—the radiant energy that fills our world with life. What we know about the other 97% is little indeed, despite the centuries men have wondered, probed and experimented. Our "windows" are small and often the view is obscure.

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The Case for Reorganization

Disciples of defense reorganization are insisting again this year that our military machinery has slipped out of date, changes must be made if we are to effectively prepare for or fight the next war. Impartial analysts (a rare commodity in Washington) are finding many of their arguments hard to shoot down . . .

by C. W. Borklund

WHEN FORMER DEFENSE Secretary Thomas Gates was briefed by advocates of further military reorganization, late last fall, on why they felt that way, he reportedly commented, "I knew things were bad but I didn't know they were *that* bad. Of course, none of this would be necessary if the Chiefs would do their jobs."

Ever since the "unified" defense establishment was set up in 1947, the Pentagon organization has been a favorite subject of books, magazines, staff studies, analyses, bi-section, dissection and complaint. "In fact," said one wag, "if all the documents defending and/or tearing apart the defense organization were assembled in one place, they would fill at least three wings of the Pentagon, including all five floors, part of the basement, subbasement and mezzanine.

Unfortunately, for the disciples of change, the Pentagon has acquired a reputation, justified in too many cases, for (1) being too easily inclined to reorganize its way out of problems or (2) if that won't work, throwing million dollar bills at the headache to buy its way out. Thus, just as unfortunately, an atmosphere of "wolf crying" has built up around the whole defense organization debate.

So, while the complaints about today's "creaky" organization appear to have a validity they have not possessed for a long time, their impact has been far less impressive than was the effect of many of the same complaints over 12 years ago—when Congress reached the concise conclusion that we needed a "national defense department" rather than three separate military protectors.

But valid or not, the reorganization debate is almost certain to be waged heatedly again this year—and just as certainly, at least within the military, very few people fit the "no opinion" category.

As in any argument, the advocates of change usually grab the stage first. The recommendations for change run the gamut from evolutionary "adjustments" to "concentrate more authority" in some form of tri-service committee to the drastic upheaval which would result in what is most frequently labeled "a single military service."

Unfortunately for unprejudiced analysis, "single service" has become a warped connotation. Those against such a major change actually encourage use of the term. The reason: used by itself it tends to rattle the emotions of fence sitters into reactionary objection to any change at all.

What these protagonists of change really mean by "single service" is, in final analysis, that we need "a single military staff" at the top Pentagon level and a *different* functional organization of the national defense effort. In other words, a breakout by tasks rather than by military service.

Whether you are on the side of change or not, all argument starts from a single key point: change can only be justified on the basis of building the most efficient structure for effectively utilizing the nation's military resources to win a war.

And to the men who insist that the changes must be made, this is precisely the point. "In spite of all the reorganization that has gone on in the last decade, we are still only chipping away at the corners of the problem," they insist. Regardless of what the organization charts may say, we are *still*, in effect, organized to fight World War II today.

"As a matter of fact, we're not even that well off anymore. At least then, the Navy and Air Force had command over their operating forces. Today, it's hard to figure out just who *is* in command"—a contention which far too many military people are reluctantly forced to accept—particularly after having gone through the frustrating

procedure of trying to find somebody at the top with the authority to make a decision that will stick.

And, insist change advocates, the most effective organization for waging a war is also the most effective organization for war preparation in peace time. They add, "we really have no choice except to be organized for war since, particularly in a general conflict, there isn't going to be enough time after the balloon goes up to rearrange things anyway."

Their hooker: "Besides, the status quo boys have never been able to shoot down this argument effectively anyway except by conjuring up unsubstantiated emotional ghosts. This, significantly, is the same sort of ploy used by Army staff people a half century ago against Elihu Root when he proposed a Chief of Staff system for the Army."

Moving from that base into their supporting arguments, the officers who insist the organization is outdated can build quite a case. (Among the reasons: they have done their homework. "When we started on this project some time ago, we assembled and studied everything that had ever been written about how a military machine should be set up.") Leading the backup arguments:

1—Will of Congress

The overall effort of Congress since 1947 has been to set up an organizational framework to allow the Defense Secretary to make changes without going to Congress, i.e. they have given the Defense Secretary more and more power. Their reason: "one of the greatest lessons of World War II was the realization that unified direction of all military power is essential to victory."

2—Decision-Making

Clearly, the current organization resembles a "states rights" setup rather than a federal organization. How can effective decisions be made when the responsibility for doing a job is vested in a unified command while the wherewithal, i.e. support, is vested in the separate services? Under such a setup there is no place to put the blame for wrong decisions, functional needs of the *total* national defense responsibility are diluted, and we have, in effect, three people (services) each trying to do the whole job.

3—People

Tied closely to the above is another argument—as has been pointed out almost to a hysterical degree in these pages in the past. It is the *people* who make an organization work or flop. And, beginning with the valid premise that the managers are (generally) conscientious, devoted and the rest, change advocates cite what they feel is their strongest supporting argument.

Current organization allows, even encourages, the talented people to consider first their separate, immediate problem—with no need to place it into context. "To carry out their particular responsibility almost forces these knowledgeable men to make the lesser (Service-oriented) seem the greater (*total national* defense) cause."

The result, they claim: duplication, divisive effort, grabbing for instead of sharing of resources and finally, two top executives, coming from different directions, colliding head to head and, in effect, cancelling each other out—in other words, no progress.

4—Military Advice

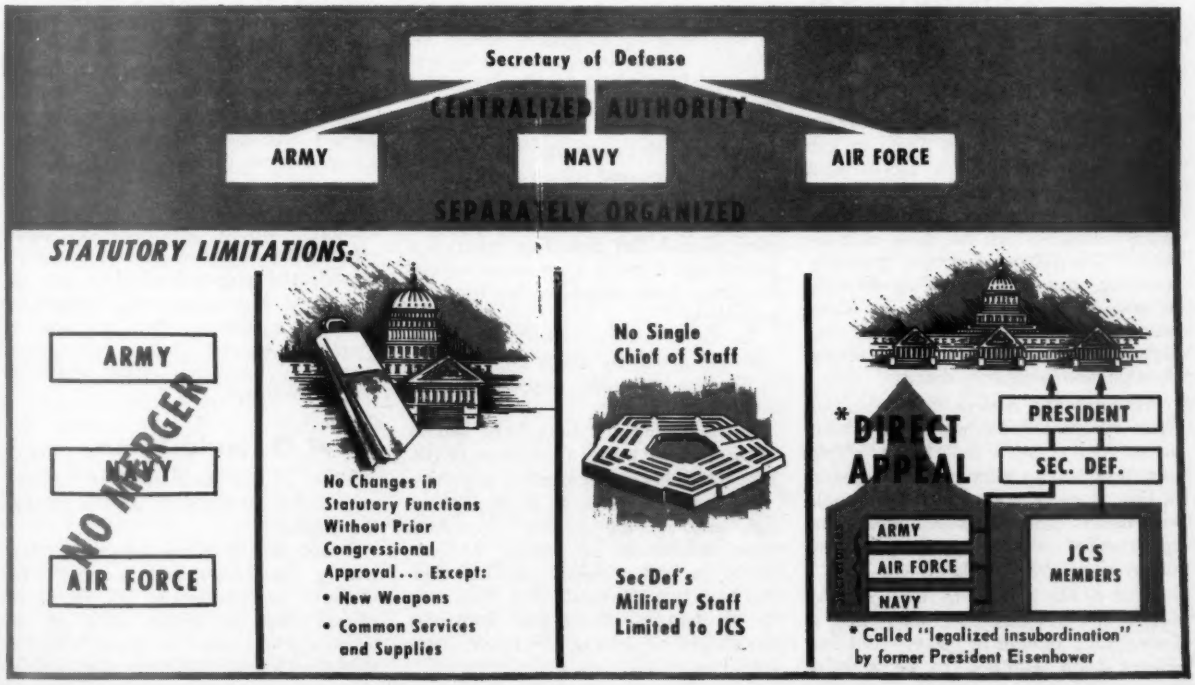
Even today, because of its committee structure, the Joint Chiefs organization is in a doubtful position to give the Defense Secretary credible alternatives. Alternatives are developed by the services unilaterally and "you know how much national military contemplation you get there." Even worse: the Joint Staff has no executive authority, can't tell people to do things—even though they are in the best position to analyze the total *national* defense problem.

5—Cost Squeeze

All three services are trapped between arithmetically increasing weapon system requirements and geometrically zooming costs of these systems. Backed by the fantastic amount of de facto power each service has been given, they all feel a responsibility for doing as much of the job as possible. Thus, to the cost crisis has been added the unnecessary additional financial burden of duplication.

(One possible immediate economy

Defense as Conceived and Organized . . . .



measure: use of common training facilities—for at least the active establishment which is not quite so hamstrung by the political chains which burden the Reserves and National Guard.)

Examples of the cost squeeze: defense was budgeting less than $100-million in 1955 for communications-electronics, will spend $600-million in 1962 for such things as SAGE, BMEWS, White Alice, Dew Line and the communications nets alone. A few submarines cost up to 20 times as much as World War II models—not including Polaris missiles. Air Force fighters cost 15 to 16 times more.

The Results

On top of this, this each-trying-to-do-it-all situation has resulted in the U.S. *national* defense establishment being able to hit Russia West of the Urals with such an excessive mountain of hardware as: B-47s, B-52s, B-58s, Atlas, Titan, submarine-based Polaris, Minuteman, carrier and Europe-based "tactical" aircraft (F-100, F-105, 83D, 83J, etc.), British V-bombers, Thor, Jupiter, Pershing, missile launching surface ships, Honest John, Corporal, Sergeant, Redstone, Mace, Matador, Snark—and for the future, a list of new weapon development which is just about as long.

Certainly, considerable opposition can be found to any one of the above five points as well as to several dozen other arguments of the "change" advocates. Regardless, however, of whether this debate will be resolved dramatically within the next year or we continue chipping away at the problem, it is a safe bet—no matter which side of the fence you are on—that there will be changes.

There always have been. (Example: "administrative" changes alone in sub offices within the Defense Department challenge the imagination they are so numerous.) With that in mind, how much changing can be done and by whom? The defense structure, generally speaking, can be altered significantly in one of three ways: (1) by Congressional action, (2) by Presidential order, (3) by the Secretary of Defense through administrative decree.

Although the current debate on defense reorganization has already built up to such a pitch that many people *assume* it will be handled by Congress, in fact, a great many of the proposals for change currently being made can be handled either by the Defense Secretary or the President.

More to the heretofore unrecognized point: the Defense Secretary has a tremendous amount of power—but has always been assumed to be a relatively weak element of this hassle merely because past defense secretaries have failed to utilize anywhere near their full administrative strength.

Clues to What's Ahead: *Determination*

McNamara's "mailed fist," as it is already being called, began banging at bureaucracy almost before the man himself had reached the Defense front office. Although it may read like tepid textbook conversation, McNamara's views on management—particularly as applied to Defense—provide the significant clues to how the department is going to be run.

Here are some of the statements he's already made on the subject:

On reorganization—

"I plan no major reorganization of the Department until I have become more intimately acquainted with its present organizational structure and . . . operating effectiveness.

"Furthermore, I have established an office of management planning and organizational studies—the first to my knowledge that has existed in the Defense Department. This office will study this problem in great detail, not only major organizational changes but minor ones as well, which can and should be made in any organization as it develops and changes to meet the changes in its operation conditions."

On reporting—

"There are, or were, 15 Presidential appointees reporting to me and to Deputy Secretary Gilpatric—15 to each of us. This obviously is an impossible situation. By eliminating two assistant secretaries' positions (Health & Medical, Properties & Installations) that number will be reduced to 13, still far too many, but at least a step in the right direction."

The Freedoms

To begin with, the 1958 Defense Reorganization Act permits the Defense Secretary to transfer, reassign, abolish or consolidate non-common *service* (or supply) functions in peace time—a freedom in contrast to the limitations on his authority to tinker with *statutory* functions of the military departments. In practice, this authority has occasionally been exercised with a good deal of freedom (as in the setting up of the defense communications agency)—even though the definition what is a *service* and what is a *statutory* activity has never been tested by any legalistic procedure.

In any event, there are at least five principal means by which the Secretary of Defense can make organizational or procedural changes:

a—exercising the budgetary and/or apportionment power to approve or disapprove military department activities.

b—using his power to appoint, to assign and recommend for promotion those individuals he desires. Defense directives and requests can be used, and have been, to establish a wide variety of changes, all the way from new procedures to setting up single managerships.

c—submitting formal legislative requests.

d—by extensive use of the above-mentioned provisions of the 1958 Defense Reorganization Act to "transfer, reassign, abolish or consolidate."

And an additional authority which used to exist (it lapsed in June '60) and will again, provided Congress reenacts it, is the law which permitted the President to invoke Executive Reorganization Plans to achieve organizational or procedural changes.

(The procedure: the President would submit any recommended changes to Congressional committes and, if Congress did not voice an opinion within a certain specified time limit, the changes would automatically take effect. More to the point: any such Presidential proposal which is *not* rejected by the government operations committees within 60 days and is therefore enacted takes precedence over *any* legislation with which it might conflict.)

What It Could Mean

What all this *could* mean to Defense organization is outlined on the following pages.

Numerous ideas are kicking around among the critics and observers on Defense reorganization, all of them geared (the advocates say) to an organizational structure which will provide the Defense Secretary with advice

for Unanimity of Actions and Policies

On control—

"I have stated to my staff, to the Service secretaries, and to the Joint Chiefs that (a) during the development of policies relating to the Defense Department, I expect full and open discussion by all Department leaders, military and civilian, without regard to whether their views conform to those of others in the Department—including my own; (b) that once a decision has been reached and a policy established representing the decision of the President or other appropriate authorities, then all members of the Department, military and civilian, will be expected to support that decision, publicly and otherwise; (c) that when I say they are expected to support it publicly, I do not mean that they should not express their opinions, particularly their disagreements, relating to policies, if queried by appropriate agencies of Congress; (d) there are additional provisions provided (them) in the Reorganization act to report (to Congress) if, in their opinion, those policies do not permit them to carry out their responsibilities."

On strategy as it affects running the Defense setup—

"I will re-examine strategy, in the broad sense of the term. The strategic weapons study is being undertaken by a group under the direction of (former Rand Corp. employee) Charles Hitch."

On relationship with State—long a complaint in some Defense offices—

"I can guarantee it will be close. Dean Rusk and I discussed this subject before we were appointed to our positions. We have held a number of discussions on it since. I expect that there will be at all echelons within State and Defense a close, cordial, intimate, cooperative relationship."

he needs—from both the military and managerial sides of the house.

Short of a special encyclopedia, no document could cover all details of the various proposals. But, as your key to what *might* be done, here are some of the major limitations and authorities which outline the Defense Secretary's power to make changes in the military establishment as outlined in existing legislation.

Limitations

As noted earlier, the Secretary of Defense cannot merge the military Services into a single Service nor appoint a single Chief of Staff nor establish an overall Armed Forces General Staff without going to the Congress with new legislation.

Similarly, the Defense Secretary cannot transfer the Service secretaries to under secretaries of Defense, nor transfer, on his own authority, any of the statutory functions assigned by law to the military departments, nor increase the size of the Joint Staff above its current 400-officer limitation. Beyond general limitations such as these, the Secretary of Defense has wide authority to make many changes in the management and organization of all elements of the Defense Department.

In the same vein, the Defense Secretary would have to request new legislation to change the basic personnel legislation applicable to the officer corps of the military departments. New legislation undoubtedly would also be required for any major change in the Reserve or National Guard programs of the military departments.

Existing Power

The sheer size, complexity and worldwide deployment of the national defense effort has been a deciding factor in leading Congress to grant the Defense Secretary an increasing amount of authority to make necessary changes to meet new requirements as they develop.

Beginning with the National Security Act Amendments of 1949, every major change in Defense legislation has increased the powers of the Secretary of Defense—and decreased, commensurately, the powers of the Service Secretaries and military departments.

For example, the McCormack amendments to the 1958 Defense Reorganization Act provide that "Whenever the Secretary of Defense determines it will be advantageous to the government in terms of effectiveness, economy or efficiency, he may consolidate any supply or service activity common to more than one military department."

Some idea of the authority contained in this amendment, however, may be obtained from revicwing the words of House Majority Leader McCormack when he introduced this amendment:

"These activities include procurement, warehousing, distribution, cataloging and other supply activities; surplus disposal, financial management, budgeting, disbursing, accounting, and so forth; medical and hospital services, transportation—land, sea and air—intelligence, legal, public relations, recruiting, military police, training, liaison activities and so forth, and use an estimated two-thirds of the military budget.

"The amendment . . . provides for maximum flexibility so that the Secretary of Defense is empowered to provide, after thorough study, the best possible type of operation for supply and service functions depending upon their nature . . ."

It Also Provided . . . .

In addition, the 1958 Act also provided the Defense Secretary with the power to assign responsibility for new weapons or weapon systems to one or more of the military departments or Services.

1958 legislation also provided a method whereby the Secretary may transfer, reassign, consolidate or abolish statutory functions of the military departments without requesting new legislation. Section 202 of the National Security Act of 1947, as amended, required the Secretary to submit to Congress any proposed plan for changing statutory functions. If there is no objection to such proposed changes by Congress, then the Secretary of Defense may order their implementation.

There are a variety of other powers stemming from his position as head of an executive department of government or from National Security Act amendments of 1949 and Reorganization Plan No. 6 of 1953.

In a nut shell, these changes in the basic Defense legislation permit him to run the Department as efficiently as possible. Said Congressmen Carol Vinson: The Secretary of Defense is "boss" of the Department of Defense and the Service Secretaries are his operating managers.

Thus, there are no private preserves in the Department of Defense and every activity of the Joint Chiefs of Staff, the military departments and the Office of the Secretary of Defense is subject to the direction, authority and control of the Secretary of Defense.

What this power outline amounts to—as it always has in any organization—is: If the Secretary is strong and builds a strong staff around him, a great deal can be done. If he isn't, the authority vacuum will be filled by default as it has been far too often in the past—by Single-Service or single-project oriented individuals. ■

Jack Holt Blades

One of a Series on Problems Facing the Defense-Industry Team . . . .

Communications:

Where "The Team" Is in Trouble

WHILE BOTH INDUSTRY and defense have been praising the defense-industry team a good deal lately, this "powerful cohesive force" is not nearly as gloriously rosy-hued as it has been described.

To have a team that works, like the bally-hoo says it should, takes more than lip service. It means diving into big managerial fields where problems (like communications) are simple-sounding and solutions just as obvious—but academic if nothing is *done* about them.

To Jack Blades (see box) and a good many members like him from the industry side of the house, this "team" will continue to run down blind alleys, waste effort, and spin wheels until top management, from both sides of the fence, (1) sees the team concept's value and (2) actively demonstrates that it takes something more than casual conversation to make the idea work.

In response to a series of questions about the roadblocks to action, here is what Blades had to say:

Q. What is your toughest problem in "setting the military stage," as you call it, for AMF engineers to demonstrate their capability?

A. The hurdle of that lip-serviced-to-death communications problem—not only between us and the military but even within our own organization, and I am sure even within theirs. We have difficulty drawing out information on what the military is thinking about and where we can be of help.

Defense's biggest communications problem, I think, is making sure that all the inputs are really put in so that they have specific outlines of what the problems are. And, to carry that one step further, they have the difficulty then of uncovering all the industries which have a capability to contribute to some specific product, seeing that they are exposed to the problem.

The "inputs" idea is a good one but not enough of the top people push it. Consequently, we get a great deal of our information by word-of-mouth—which is hazardous and runs the risk of being a personal opinion rather than an authoritative military position.

Our internal problem, in coming up with answers to some of their problems, is much the same. I am constantly amazed with the capability that keeps popping up unexpectedly in our own organization, coming up with some of the things the engineers do.

Q. How do you uncover this capability?

A. The technique is nothing brilliant but it can be very effective if top management insists on it. It's the same thing General Trudeau is trying hard to crank up in Army R&D, i.e. encouraging dynamic thinking, the idea men. Most of the ideas may be worth nothing but we'll never know unless the engineers and scientists throw them out into the open.

Q. Are there any pitfalls to "priming the thinkers?"

A. There is one big one, a problem that exists not only within our own organization but within the military and, in the third place, with our men who contact the military. It amounts to the hesitancy about sharing ideas for fear of getting a reprimand.

You get bloodied a couple of times (and 90% of the ideas are sloughed off as no good) and the average man tends to back away. Instead of thinking originally, he starts trying to anticipate what the boss is going to think and answering that way. As Trudeau says, he shouldn't, and like Trudeau, we have very little use for this type.

Q. How well does the military handle this?

A. There are times I worry considerably about that. You can't tie this sort of thing down with any statistic, naturally, but I have considerable doubt, occasionally, that they really anticipate and push good ideas which look farfetched, but aren't.

Q. Is this tied up with the "authority to be wrong?"

A. Absolutely. Without that delegation of authority the whole thing flops. Morehead Patterson (AMF Board

Chairman) had the authority (and the "guts," if you will) when he was developing the Pinspotter. If he hadn't, and it hadn't worked, he possibly would not have AMF as it is today.

Q. What are the results?

A. Well, for the military, it means industrial concerns will come up with ideas—usually at no cost to the government. An example is AMF's development of cross bar switching in communications. But the real advantage is that we don't have to worry about holding back what we think is sound advice just out of fear of alienating the customer.

Q. What are your communication channels with the military?

A. For one thing, we have a customer service department in the field to check constantly on the new ideas coming up, keeping AMF abreast of current thinking in the military across the country—and even overseas.

But the fuel that makes this organization run is talking to people on a day-to-day basis. There is no substitute for contacting the military on a timely, continuing personal basis to get thoughts, ideas.

And Defense is set up very well to handle these audiences. I don't mean the formal briefings in which, unfortunately, we usually have a hard time drawing out what is really going on in the military mind. We have more success with a coffee break in the morning, for instance—in their offices, not ours, discussing these things with them in their atmosphere.

Q. Does hiring ex-military officers fit in here?

A. I think people in the military have a definite contribution to make to the military after they leave. Regarding those Congressional hearings a year ago on "officer hiring," I believe strongly that military men should not be chastised for going back to their former service to offer answers to some of the problems they know exist. They are knowledgeable and their ideas for problem solutions should be brought forth. We should take advantage of their talents, not fetter them.

Q. But what about the influence aspect?

A. Influence plays, and will always play, a large part in any contracts that are issued as long as people are doing the analyzing. They are influenced by past experience, personalities, capabilities. And, furthermore, even if influence sells the product, the company has to back up what it promises or it doesn't stay in business. Besides they (Defense) have drawers of justification on why they say "yes" or "no."

Q. Where must the answer to the communications problem come from?

A. Unfortunately, I guess, the monkey goes on the military back for this one. We are both looking for the same thing, of course, providing answers. But the solution on how to make industry aware of the problems must come from the military. Far too often, we can only guess that we are contacting the right people, demonstrating to them that we have the sort of capabilities they need. Defense is supposed to know who the right people are. But, based on some of the past decisions, I sometimes wonder if even they know. And if they don't, how can we find out? ■

Background on AMF's Challenge:

In 1958, under the leadership of American Machine and Foundry Board Chairman, Morehead Patterson, Carter Burgess, as President, Rodney Gott, Executive Vice President, and Fred Powell formed AMF's Government Products Group. Government bookings were then at a low $10-million. By year-end bookings had doubled, zoomed in 1959 (to $82-million), and AMF wound up 1960 with another impressive report: to about $150-million worth of government business.

While few people, including the men themselves, give the Burgess-Gott-Powell team unqualified credit for all that meteoric success, most AMF personnel *do* give them credit for setting up the right kind of corporate environment to make that progress possible.

Basically, this meant little more than a very obvious, but very vital demonstration of enough faith in the people and the organization to give them a free hand in grabbing for a chunk of the military market, showing the military what AMF could do.

One of the key men in this drive to the top was 43-year-old Jack Holt Blades, today head of the Customer Service Division, Government Products Group. In 1955, when Blades joined AMF, he left a pair of jobs: with his own firm, Blades Manufacturing Corp., and with Selb Manufacturing Corp. (machine and sheet metal parts), as president, head salesman, manufacturing engineer and problem solver.

Says Blades, "I came into the organization with virtually no experience in military. From the know-how talents of both military and AMF people that I was immediately exposed to, I became convinced there was no limit to AMF's opportunity."

His problem: At the management level, probe for areas where AMF's engineers and scientists could "show off" to military buyers. With one million square feet of manufacturing floor space, over 3000 engineers (a work force no commercial concern could afford to maintain without government contracts), Blades had to find all the right stages or AMF's Government Business could easily have nose-dived into disastrous financial trouble.

Drawing on that experience in "stage hunting," in the sale and manufacture of hardware to defense and a host of prime and sub-prime contractors, Blades outlines, in the accompanying article, some of the problems he has run into.

In sum, they amount to pointing out a serious gap in communications, a complaint that both members of the so-called defense-industry team frequently display a disconcerting inability to get together. While not a startlingly new discovery (industry—and the military—have complained of this before) it is, as Blades points out, one of the basic tools in the defense-industry relationship that demands constant attention.

PENTAGON PROFILE:

Captain Levering Smith

Director, Technical Division/Special Projects, Navy's Bureau of Weapons

How Good Planning Pays Off

ONE OF THE MOST SIGNIFICANT, and least recognized, roles in the whole Polaris Weapon System Development was, and is being, played by a 51-year-old mid-westerner: Captain Levering Smith.

Called "the smartest scientist in uniform" by his boss, Vice Admiral Wm. F. Raborn, he has been labeled "the sharpest technical program director I've ever worked for" by most of the SP staff. Members of the team, both in Navy and industry, have been amazed by two things about Levering Smith: (1) his impressive talents, both scientific and managerial; (2) the fact that his vital role has gone virtually unpublicized. Yet, Levering Smith's stamp can be found in every important aspect of today's Fleet Ballistic Missile System.

Outlining all of them would take a text book. Some key points, however, don't require that much research. Among them:

Item: "We started in 1956 on the basis of assuming we were successful —which has been the general approach used around here ever since."

Item: "We have kept development engineers fully responsible for subsystems until well into production." The object: keeping together responsibility for development, production and maintenance before the system hardens too much. Idea is based on Smith's experience at Naval Ordnance Test Station and elsewhere.

Item: Part of his early recommendation—nothing be done on Polaris until after a three-month study by top U.S. scientists. Object: complete a comprehensive preliminary design study so that (1) "everyone would know exactly where we wanted to go, (2) we would avoid running down a lot of blind alleys."

Item: In addition to this three-month study, Levering Smith himself drew up an operational plan for technical development. He wrote it up, filed it in the safe, without showing it to anyone. "I figured I wouldn't have time to write it when the project started." Even though no one else in this team has ever seen it, it has become Smith's personal milestone chart. Another example of Smith's quiet insistence on not leaping until he's looked, it has become, indirectly, through other paperwork communications, the technical development plan for the weapon system itself.

Since Smith had led most of the technical planning up to this time (1956), he was put in charge of the design study group, moved from there into his present job as technical director of Special Projects—with a short pause as "head of the Special Projects Propulsion Branch" while SP was still saddled, technically at least, with taking the liquid fueled Jupiter to sea.

An early indication of how soundly his efforts have marked the program's path: all major design decisions made in 1956 have held. The only major change has resulted from a major alteration in goal: from a 1500 mile missile in '56 to a 2500 mile range today —to counter a possible major Russian ASW threat.

Characteristically soft-spoken, articulate Captain Smith will, if forced, sum his whole contribution up with "merely good planning by smart people." But military technical program managers trying to understand what this means

(continued on page 34)

WHO is at work on a satellite system for global telephone and TV transmission?

WHO provides the communications channels for America's missile defenses?

WHO is girdling the globe with communications for America's first man into space?

WHO tapped the sun for electric power by inventing the Solar Battery?

WHO used the moon for two-way conversations across the country?

who?

WHO guided Tiros and Echo into accurate orbit?

WHO made your pocket radio possible by inventing the Transistor?

WHO maintains the world's largest, finest industrial research facilities?

WHO supplies the most and the best telephone service in the world?

WHO has the UNIVERSAL communications organization?

THERE'S ONLY ONE ANSWER TO ALL TEN QUESTIONS

BELL TELEPHONE SYSTEM

Pioneering in outer space to improve communications on earth

U.S. AIR FORCE
BLUE SCOUT

LEFT: USAF technicians of 6555th Test Wing under technical supervision of Aeronutronic engineers erect Blue Scout on simplified launch pad prior to successful flight. The development of Blue Scout effectively bridges gap between larger, more expensive ICBM's and smaller sounding rockets in our advanced space research and test programs. The Blue Scout is the largest solid fuel missile ever fired at Cape Canaveral.

OPPOSITE: U. S. Air Force Blue Scout Jr., lifts off launch pad as spin rockets ignite. This unguided 4-stage missile was successfully launched on the first attempt.

U.S. AIR FORCE PHOTOS

The United States Air Force Blue Scout Program provides the Nation with a new and versatile low-cost family of test vehicles to support our military weapons and space systems development programs. It can be used in a variety of deep space probes, orbit missions, boost glide trajectories, and as a rocket and satellite command and control communications system. Blue Scout has already fired a 32-pound scientific payload 16,000 miles into space ...and a 392-pound payload in a controlled trajectory 1400 miles down the Atlantic Missile Range. Aeronutronic is systems engineer, payload and test contractor on this important Air Force program.

AERONUTRONIC DIVISION Ford Motor Company, DEFENSE PRODUCTS GROUP
FORD ROAD, NEWPORT BEACH, CALIFORNIA

Write for information about Aeronutronic's capabilities and the career opportunities open for engineers and scientists.

The Blue Scout program, based on modifications of the NASA Scout, is under the executive direction of the U.S. Air Force Ballistic Missile Division, Air Research and Development Command. Above LEFT: Blue Scout is raised to a firing position on simplified launch pad. Because missile requires minimum ground support equipment, it is operable in a number of various field environments at minimum cost. *RIGHT:* Instrument package of Blue Scout is checked by Aeronutronic personnel and Air Force technicians. Accurate guidance system, data recovery system and final stage attitude control make Blue Scout adaptable to a wide variety of applications.

BS

"It is believed that no other single aircraft in the world can match the performance of the TSR 2..."

The Right Hon. Harold Watkinson, MP, British Minister of Defence, speaking at Weybridge, on Friday, 7th October 1960

...AND BRISTOL SIDDELEY SUPPLY THE POWER

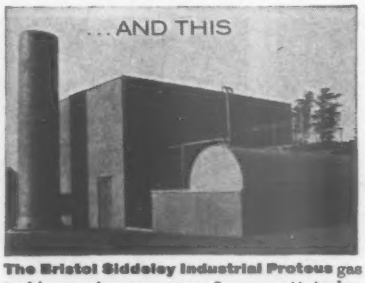
British Aircraft Corporation have recently received an order from the Ministry of Aviation for a number of TSR 2's. One of the most advanced military aircraft ever to be designed, the TSR 2 will be used in tactical strike and reconnaissance roles with a wide range of weapons, including nuclear. It will 1. Reach twice the speed of sound at altitude. 2. It will be capable of high subsonic speeds at ground level, and 3. It will have short take-off and landing capabilities from inferior surfaces.

The Minister of Defence said, when announcing the order: "It is believed that no other single aircraft in the world can match the performance of the TSR 2 in all three respects." The TSR 2 will be powered by the Bristol Siddeley Olympus turbojet.

The Bristol Siddeley Olympus has proved itself in service to be one of the most successful turbojets ever built. Its truly astonishing built-in potential has been strikingly demonstrated by the threefold increase in power from the 11,000-lb thrust of the original production engine to the 33,000-lb thrust with reheat of the latest version. The Olympus, which has already helped the Avro Vulcan V-bomber to achieve its outstanding performance, embodies all the qualities essential for the efficient propulsion of a supersonic aircraft:—high power at high altitude; remarkable handling characteristics; extremely low fuel consumption; great operational flexibility; a long overhaul life; and the highest power for its weight of any high-thrust turbojet.

The Olympus is a strong contender for Britain's supersonic transport.

The Bristol Siddeley Olympus high-thrust turbojet powers the Avro Vulcan V-bomber, spearhead of the RAF's deterrent force.



The Bristol Siddeley Industrial Proteus gas turbine engine powers a 3-megawatt turbo-generator which operates unmanned.

The Bristol Siddeley Marine Proteus powers the "Brave" class Royal Navy 96-ft, 50-knot patrol boats.

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Some French Opinions on:

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15. UNITED STATES
NATO COUNTRIES
SOVIET BLOC
On April 4th, 1949, the North Atlantic Treaty was signed by twelve countries. It contained a clear warning to any would-be agressor: an attack against any of us shall be considered an attack against us all. Three years later Greece and Turkey joined the Alliance, and in 1955 the Federal Republic of Germany became NATO's fifteenth member.
NATO COUNTRIES
SOVIET BLOC

What's Ahead for NATO

by Anthony Vandyk

Background: Shortly after an article appeared in November, AFM, on "NATO: the Longer We Wait . . ." three distinguished Frenchmen, all experts in NATO affairs, reacted with some highly original thoughts of their own to AFM's European correspondent on what's ahead in the world's strongest military alliance.

Their names: Senator Bethouart, Senator Pisani and General Gallois.

Their background:

Bethouart, a retired Army General and veteran of both world wars, has been active in NATO affairs, was president of the Conference of NATO parliamentarians in Washington in 1959. Pisani has been active in NATO matters in the French Congress and is a member of the NATO Conference of Parliamentarians. A member of the resistance movement in World War II, he has been governor of two of France's most important provinces. General Gallois is regarded as one of France's greatest strategists, has had an extremely distinguished career in the French Air Force and served on the SHAPE headquarters staff.—Ed.

AS A RESULT of the article "NATO: the Longer We Wait . . ." in November, '60, AFM, some highly original, interesting thoughts are circulating NATO headquarters near Paris.

On the knotty problems facing NATO today (among them: control of nuclear weapons, Polaris for NATO, etc.), three distinguished Frenchmen (see background at right) have presented their views, have, as a result, added new depth to a debate which may continue for the rest of the year —before a decision is reached.

Indicative of the kaleidoscopic range of opinion, by men of authority, which must be resolved before NATO can make a decision, these views also give U.S. military men an insight into how European NATO members—some of them, at least—look at the alliance headaches.

The ideas voiced here come from three Frenchmen, Senators Bethouart and Pisani, General Gallois. A clue to the value of their comments: Gallois, for one, is regarded as one of France's greatest strategists.

Here is what they had to say:

On whether NATO itself should be given control of a nuclear deterrent force, Bethouart commented that it would be a good idea to give NATO *part* of the deterrent force, he thought, particularly that part destined to act in case of aggression on territories guaranteed by NATO, aggression carried out with conventional (non-nuclear) arms. But, he added, in the event of a general nuclear attack, he feels that the only deterrent force capable of counter-acting is the Anglo-American strategic force, particularly the Strategic Air Command. This force, he feels, since it is "our guarantee against nuclear aggression," should not be touched. However, he believes it must be complemented by European forces—which could be made available to NATO with certain reservations (mentioned, by him, in what follows).

Pisani, on the other hand, believes that the NATO organization itself should definitely be given control of the nuclear deterrent force—when the Atlantic Alliance becomes a real association and more than just a military treaty, i.e. when the responsibility, destiny and even civilization of the peoples of member countries is wrapped up in the organization.

Until this state of affairs comes about, he believes NATO should maintain a deterrent force adequate to handle only those problems which NATO, as an alliance, would clearly have to resolve. In a broad look at NATO's future, he told us that posi-

tion of this force and the establishment of rules for its use are first steps which must be taken if the alliance is to progress. As things stand today, Pisani notes, 14 nations have delegated their defense to the 15th.

Military expert, General Gallois, however, said that giving NATO control of some nuclear deterrent forces would be more a political than a military gesture. His judgment: from the military aspect, American control is the best solution, "at least as long as American forces are committed in Europe—and I cannot foresee a political situation in which they could safely leave Europe." His backup: If 15 nations had to be consulted before weapons could be used, their deterrent value would be greatly diminished. Gallois adds that whatever political advantage there might be to a joint deterrent is secondary compared to the probable loss of efficiency of the whole system.

Commenting on former U.S. Secretary of State Herter's proposal that NATO's future development be laid out in a 10-year plan, Pisani observed that the plan "is indispensable," provided it deals with NATO's geographical extension, competence and the treaty definitions.

Gallois feels the Herter idea, (whose object is to shift emphasis from military to economic problems), was excellent "but not sufficiently specific." It won't solve, he says, two of NATO's current problems: the wide range of weapons needed today (most of which are too costly for a large number of member nations to buy); and the big question of whether a massive retaliation policy makes sense if only one NATO nation is isolated and threatened separately.

All three Frenchmen felt the right first step in setting up a NATO nuclear deterrent would be a small Polaris missile force. But again, Gallois wondered what it would add to the already "devastating power of SAC," added "the isolated nation would accept protection from such a force but would the other members be willing to run the accompanying risks?"

The three men were very insistent about the U.S. retaining forces in Europe. Pisani, particularly, wondered what Europeans would think if the U.S. reduced its interest in defending Europe to solely the "terrifying use of nuclear arms." (As a second thought, Bethouart asked, "Why not station European units in the U.S. just as American units are stationed in Europe"—as one of those first steps in making this a real alliance.)

(*Continued on page 33*)

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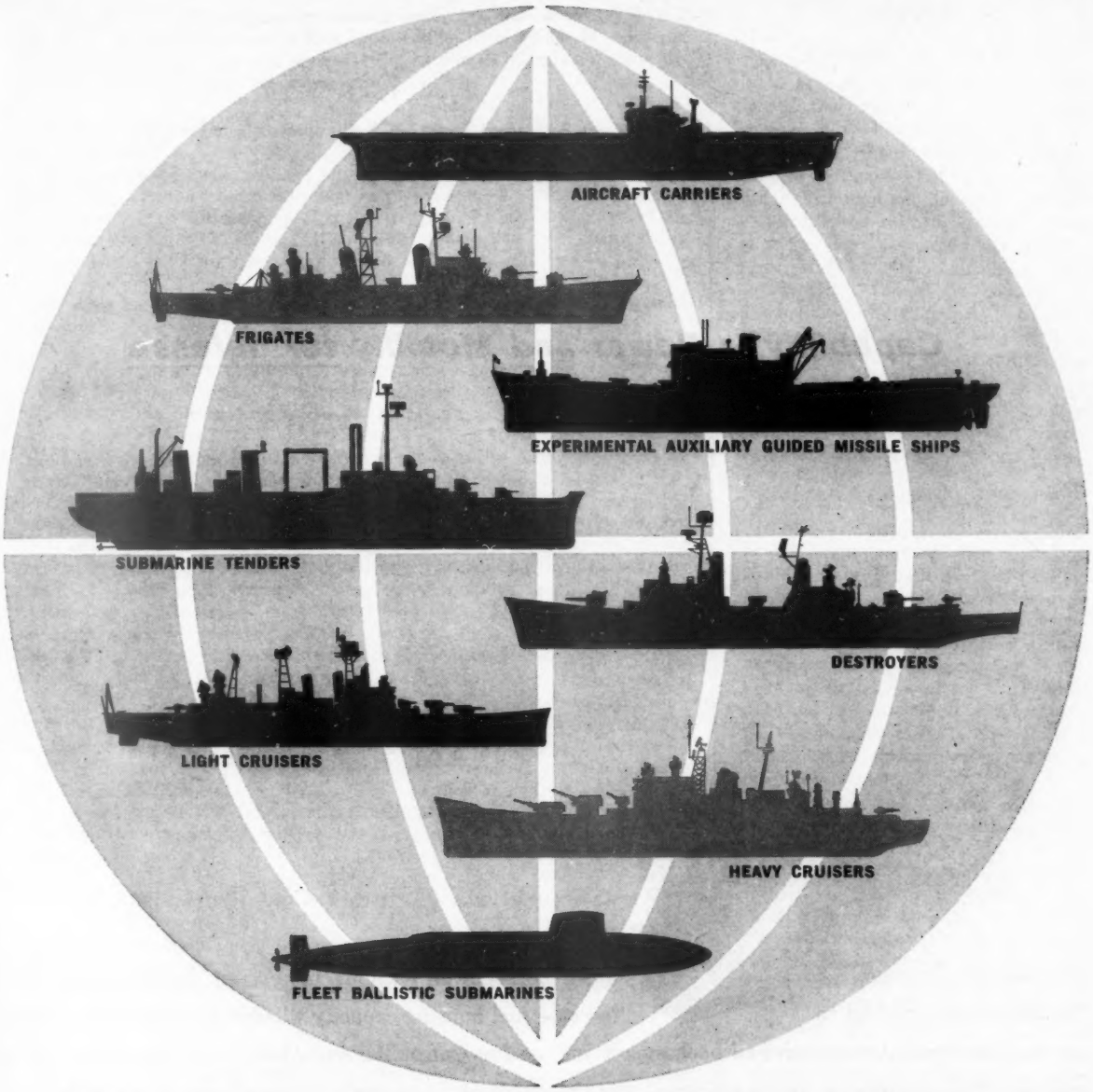

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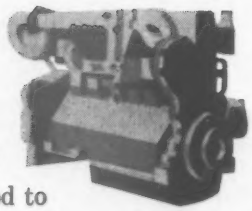

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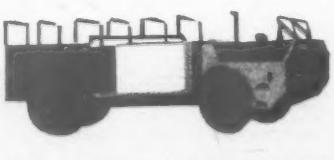

The quiz of West European authorities regarding the future of NATO by AFM's European correspondent produced a wide range of observations. Although they may not represent the consensus of opinion, they are thought provoking. Here are a few:

Should the NATO organization itself be given control of the nuclear deterrent force?

There might be some political advantage in this proposal but it would be secondary to the loss of efficiency and effectiveness of the defense system as a whole. American control is the best solution as long as American forces are committed in Europe. No political situation is foreseen in which American forces could safely leave Europe.

Of what value to NATO would be the addition of a small Polaris missile force?

Politically speaking, NATO would gain little from such a force, the use of which would be dependent on 15 possible vetoes. If the west should be attacked simultaneously as a group of nations, the Polaris still would add little to the devastating power of the Strategic Air Command.

What is the reaction to the 1-year plan proposed by former Secretary of State Herter for the economic and military development of NATO?

There are two problems facing the Herter plan. One is the decreasing credibility in a massive retaliation policy and the other is the prohibitive costs of modern weapons for many nations. To improve the credibility of deterrence, it might be advantageous to give each nation some atomic capability under dual control. To meet the problem of costs, a system of combining national resources in money and brains for the production of weapons might be added to NATO. These weapons would be used collectively and in certain cases distributed at a national level with the constraint of dual control if necessary.

If NATO were provided with its own nuclear force, would not the number of people in command hamper the ability to retaliate immediately?

It would be very difficult for the representatives of 15 nations to reach agreement on definitions of danger criteria which if verified might allow the Commander-in-Chief to retaliate. Militarily speaking, the concept of a committee expressing unanimity on the views of 15 nations has little value.

Should American legislation restricting the control of nuclear warheads be amended?

Existing legislation might be improved if amended to make room for the double control concept. This would provide for the use of given atomic weapons by the receiving NATO nation only if and when certain specific cases of danger materialized.

Does not unilateral control of nuclear armament mean that the use of NATO force depends on decisions in which the NATO nations other than the United States and Britain have little more than an advisory part?

This is true and to a certain extent such a situation is a good one in a period of cold war. General agreement by all NATO member nations on the use of atomic weapons would be very difficult. Establishment of a collective system, therefor, weakens the political possibilities of the new weapons.

Should some members of the NATO alliance be contributing more of a share in finances and resources to the NATO military arsenal?

Some members should make greater contributions. These should be made within a combined effort, however. Under the present system, each nation makes an individual contribution and this results in duplication and waste of effort.

If NATO is given a nuclear deterrent, could or should the United States reduce the size of its military units now stationed in Europe?

With the reduction in the credibility of the use of the only weapon that can neutralize strength, American commitments in Europe cannot at the same time be reduced. On the contrary, these commitments should be increased to offset the diminishing credibility of the use of allied atomic weapons.

NATO

(*Continued from page* 30)

On the other hand, all three also agreed that the other NATO members should contribute more in finances and resources to the military arsenal. Bethouart felt, too, that the the contribution should be broadened to include the scientific research that is going into perfecting the NATO force. Gallois' only qualification: this augmentation should be handled as a combined effort and not, as presently, by each nation doing what it wants to do—with the accompanying duplication and wasted effort.

Moving to the control of nuclear weapons, each man had some definite opinions. Among the highlights:

Nuclear Control

Gallois—while U.S. legislation (which keeps warhead control in U.S. hands) is not necessarily bad, possibly it should be amended to make room for a "Double Control," i.e. the receiving nation be given a voice if *certain specific* cases of danger materialized. General Bethouart added that while decisions of principle should be made by all member nations, the decision to use nuclear forces can be vested in only one person.

At present, the decision rests with the U.S. president. The other powers have no opinion to give and, in any case, there would not be time to consult them. His only suggestion: if a NATO element were incorporated in the strategic force, the European nations could be represented there by a spokesman such as the SHAPE commander or NATO Secretary-General.

Pisani's key reservation: since this power carries with it, in effect, the choice of the people on whether they prefer liberty to life (possibly), it should be an allied political body—not a military one—which participates in the decision.

If this wide range of cogent views can be summed up at all, particularly as an indication of European sentiment generally, at least one consensus is clear: while the need for a single authority to make tough decisions fast is obvious, it is just as obvious that the other 14 members need to be more closely tied to the U.S.

That is, they must be if NATO's current problems are to be solved and NATO's policy and day-to-day operating performance are ever to become what they should be already—an accurate reflection of the total thinking of all members. ■

Levering Smith

(*Continued from page 24*)

are almost forced to delve into Smith's entire Navy career.

A 1932 graduate of the Naval Academy, he didn't move strongly into the engineering operation until he transferred into the Bureau of Ordnance in September, 1940, got involved in fire control and "I got so curious, I couldn't let go." While there, he gained his first front office attention, had people 10 years his senior working for him, also got his first taste of what it's like to be involved in a rapidly expanding program (magnetic mines) just prior to the war.

Building a Career

Starting at Manila Bay, he was "shanghaied," as he calls it, into "everything going on" in the early stages of the Pacific conflict, ended up participating in 11 campaigns and engagements, survived the 1942 sinkings of the *Hornet* and *Northampton*.

Called back to Washington in 1944, he headed the rocket propellant, pyrotechnique and chemical warfare subsection, research and development division, Bureau of Ordnance, until 1947, spent the next seven years at the Naval Ordnance Test Station, Inyokern, Calif. —as deputy head of the explosives department and later head of the rocket and explosives department and associate technical director. (While there, through a series of paperwork complications, he also held a unique two-hat job as military advisor to himself.)

This managerial background helped him nearly 10 years later to come up with most of the right technical program management answers on Polaris. But he went the executive development one step further, joined a group of scientists and engineers in Navy who set out in 1947 to build a foundation for solid propellants that time had not allowed in World War II.

(Among other successes, this meant saving the Allegheny Ballistic Lab for Navy—when Army was about to close it down because there was "little need for it." Whether luck or foresight, the move paid off later when much of the work of Levering Smith and the ABL staff developed, virtually, into the Polaris second stage engine of today).

Detached from NOTS in 1954, he assumed command of the Naval Ordnance Test Facility at White Sands (as well as being Navy Deputy to the White Sands Commanding General), held the job until 1956. At the tail end of this tour, unknown to Smith, several conferences were taking place in Washington which were to sweep him into the Polaris development effort. Among them:

1—Then Presidential Scientific Advisor Killian, and his committee, said "the IRBM should be taken to sea" with a 1500-mile range, one megaton warhead.

2—What hardware? National Security Council said take the Army (Jupiter) missile—even though Navy argued for a solid fuel weapon.

3—An Anti-Submarine Warfare Study Group (of leading U.S. scientists) had concluded, as one offshoot of their investigation, the key prediction that future missile warhead sizes would be smaller, not larger as the Killian committee intimated. (A Levering Smith-sponsored study at NOTS had already come to the same conclusion independently in the routine analysis of deciding what the successor to Jupiter, at sea ought to be.)

Upshot of all this activity was that Smith got a cryptic call at White Sands to come back to Washington. Navy wanted an outline from Smith of the missile-system-at-sea parameters for Aerojet and Lockheed to bid on. Says Smith, "we chose a scheme that really was quite conservative technically," amounted to insisting that solids in missile propulsion was the most logical answer but "because the Administration insisted, we would glide along with Jupiter at the same time."

The Army hit the ceiling, split the effort wide open. (The bitter in-fighting during this embryonic stage in Polaris' creation may never be fully revealed.)

The End Results

Result: SP suddenly found itself with a missile project in mid-1956. And Smith, who had laid the whole thing out, was asked by Raborn, "okay, how about coming back to work for me."

"When?"

"Next week."

Smith went as far as he could in fulfilling that request, spent the next few months commuting between White Sands and Washington, actually holding down two jobs. (Besides his key efforts on the study, Smith had other things to recommend him to Raborn. Among them: suggestions from such top industry people in the program as Dan Kimball of Aerojet General; the fact that Smith had once fulfilled, during the Korean War, a Raborn requirement for a new rocket warhead—in the amazingly short time of just two months.)

Recognized today as one of the nation's real pioneers in solid propellant fuels, Smith is on a first name basis with most top rocket scientists, has such an impressive reputation for being right in his comprehensive arguments that he is the only man Raborn will allow to talk beyond the eight minute time limit during SP briefings (see AFM, Feb. '61).

Just as impressive as all this have been his contributions to both the management control and management philosophy which has run the Polaris development.

In sum, say his Navy backers ironically, "probably the most amazing thing about Levering Smith's monumental performance, both technically and as a manager, is that he has managed to do all this while remaining virtually anonymous." ■

LEVERING SMITH was born in Joplin, Missouri, March 5, 1910, and went to school in Grafton, Illinois, and Columbia, Missouri, before entering the Naval Academy in 1928.

He left Annapolis in 1932 as a newly graduated ensign and his first assignment was aboard the USS Texas where he remained for four years in the Gunnery, Communications and Engineering Departments. After service with the destroyer USS Shaw, he returned to Annapolis for a two-year course in Ordnance at the Naval Postgraduate School which led to duty in the Magnetic Range Subsection of the Bureau of Ordnance, Washington.

Just before and during the first two years of World War II, Capt. Smith served on the USS Bulmer as Gunnery Officer and Executive Officer; as Gunnery Officer for Commander Destroyer Squadron 29; Flag Lieutenant, Commander Task Force 17, and as Chief Staff Officer to Commander Task Force 67. He headed up the Rocket Propellant, Pyrotechnic and Chemical Warfare Subsection of the Bureau of Ordnance from September 1944 until September 1947. Next came a lengthy tour at the Naval Ordnance Test Station, Inyokern, Calif., with service as Deputy Head of the Explosive Department, as Head of the Rockets and Explosives Department and as Technical Director.

Capt. Smith took command of the Naval Ordnance Missile Testing Facility, White Sands, New Mexico, in April 1954.

Subsequently, he became Head of the Propulsion Branch of the Special Projects Office, Bureau of Ordnance, and in December 1956 was named Deputy Director of the Special Projects Technical Division.

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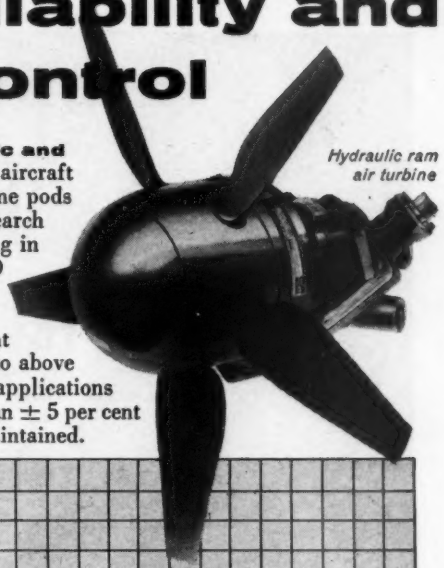

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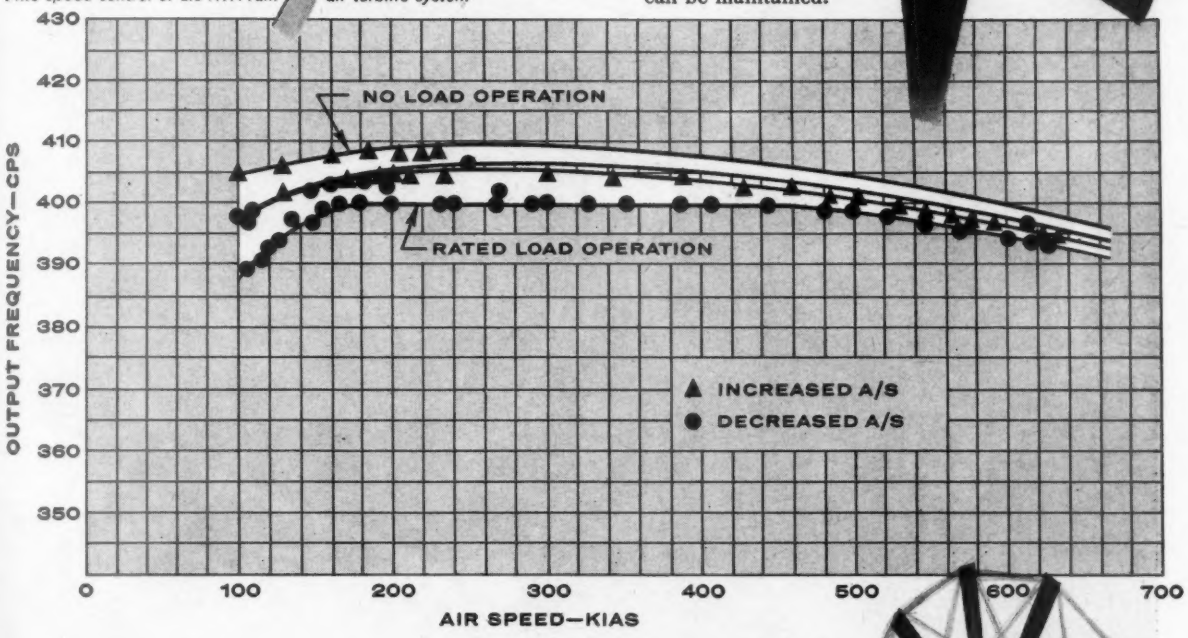

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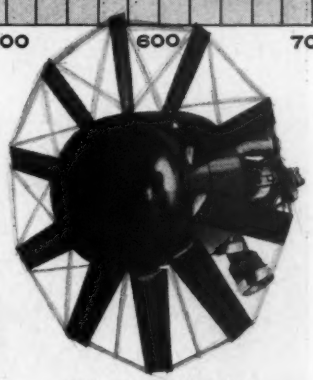

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Canaveral Special Report:

The Atlantic Missile Range at Cape Canaveral is still fighting a major waste it knew existed as far back as three years ago. And as the nation's rush into the missile-space business leaps in geometric proportions, the problem grows more and more acute—and AMR receives less and less help . . . .

"To Save A Dollar, Waste 20"

TALENTED BUSINESS executives familiar with defense operations have long been disturbed by an apparent military penchant for looking only as far as the end of one's nose—when it comes to effectively utilizing men, money or material.

Examples of this myopia are as thick as ants at a church picnic in the field of personnel policy. The short-sightedness has cropped up in contract procedures (although even industry admits its complaints here have sometimes been "slightly" biased).

Surprisingly, this same inability to see the forest for the trees apparently exists in the one area which the entire nation has assumed for some time is receiving all the resources support it needs, i.e. the missile-space business. When Lt. General Donald Yates (see AFM Jan. '61) was running AMR, he warned repeatedly that AMR's support efforts needed more attention. According to Canaveral's key staff people the situation is even worse today.

When 51-year-old Maj. General Leighton Ira Davis assumed command of the missile test center in mid-1960, many of his problems were no more unique than those faced by a top military manager in any key installation. Among the common ones: "Com-

munications between AMR people and missile or space project officers on daily support needs is, or was, especially bad."

Adds Davis, "It took a man of Yates' wide-ranging talents to run this operation before." Davis' continuing hurdle, and one which only he can solve, has been to set up a routine which would guarantee a smoothly functioning operation regardless of who sat in the driver's seat.

Among his methods: Where Yates had anywhere from 12 to 30 officers reporting to him directly, Davis has felt there is not enough staff coordination. His answers: decentralizing responsibility ("We can't have them—the rest of the staff—running to the front office every time something comes up"); setting up a chief of staff system primary object of which is to see that all the AMR support people work together. Comments Davis, "If they can't solve a problem, at least they will have it defined by the time they get to me."

Another problem: "We started out with too much overhead. We are paring it down now to be more efficient."

In sum, his whole approach to running the operation has emphasized two areas: (1) better management of resources—"by having good people in the right spots, giving them comprehensive goals, following up to see how well they are doing;" (2) by better coordinated staff work, responsive to what needs to be done in all areas.

And, says Davis, smiling, "We have plenty of help to see that we do a good job." (AMR is investigated by somebody just about every month. "With regular visitors from the General Accounting Office, the Congress or the Air Force Comptroller, not only we but our range manager, Pan Am, and their backup on the technical side, RCA, have continual reminders that there is no room for flubs.")

Biggest Problem

But Davis' biggest problem, and the same one Yates faced, still has not been tackled as it should. Although Davis himself, knowing the ins and outs of the Pentagon political arena, is reluctant to thump the drums of anguish loudly over this problem, his staff feels no such reticence.

As anyone with a copy of Canaveral's charter knows, the Cape's sole reason for being is to provide "outdoor laboratories" test support for military and civilian missile and space research projects. Obviously, then, they must be, to use the Pentagonese, "responsive to the needs of range users." This, of course, has been assumed by most people and therein lies the key to the problem.

Canaveral's physical plant has a net worth today close to $1-billion. Its yearly support operations cost about $200-million, which amounts to a major share of the ADC budget. All of this sounds like a lot of money until it's stacked against the projects which AMR supports.

The big ones, as most of them are, being tested at Canaveral are costing defense as much as $1-million per day per system. Translation: in less than a month the headline grabbing projects alone will cost defense as much money as AMR's entire yearly support budget.

Logically, therefore, each day of delay tacked onto the development time of a project is extremely costly. And that time span from building of test models until the building of production systems, one of the most costly in a weapon system's life span, is also the time most sensitive to AMR efficiency. (Example: One big reason the Rascal program dragged on until it became obsolete was that AMR hadn't the facilities to provide the needed answers fast.)

The Answer

Many of these delays, obviously, are unavoidable. But those which can be blamed on AMR's not having the resources to provide adequate facilities are deadly examples of this shortsighted philosophy—"Save a dollar even if it costs you twenty to do it."

Just providing real estate for launch pads is the least of AMR's problems. Time is consumed in three areas: communications, instrumentation, and data processing of test shot information. AMR can save time, therefore, by having the most modern equipment available to handle all three of these jobs.

The idea: an extra investment in range facilities will save costs many times over on programs. "But," said one officer, "since I've been here (over three years), we've had very little success selling this logical philosophy to the boys in Washington.

"I'd still like to see an operational analysis study done on this place."

And, while the $62.9-million shot in the arm due to go to Canaveral this year will help, most of it is being gobbled up in the construction of two down-range data gathering ships. Although necessary, they, and their high cost (roughly 5/6 the total allocation) leave only a pittance for the other high priority demands.

Example: AMR is only slowly getting around to modernizing the range instrumentation, i.e. telemetry facilities, cameras, etc. How far behind is the program?

Estimates on tardiness, particularly at the down-range end of the line, run from six months to a year. On Atlas and Titan it is even worse: "We've been missing a good deal of data on Atlas and Titan missiles we have been firing for a year or more." Thus, in effect, it takes two missiles to get all the information which up-to-date facilities might be able to supply with only one shot. Possible savings are obvious.

A Real-Time Basis

On communications, things are just as bad, at least according to one officer. "I don't know where the electronics industry has been for the last twenty years, but we still can't talk to each other the way we should be able to down here." His contrast in his complaint: Strategic Air Command can fire a message around the world in seconds. "We have trouble calling Patrick from the Cape."

In the data processing end of the operation, things are better, but not much. It used to take a week to process all of the data picked up on any given shot. Canaveral can now do it in three days. Their goal is to have real-time data reduction.

A first step has been the conversion to IBM 7090's at both Patrick AFB and the machine at the Cape. This still doesn't provide real-time answers but it's a start.

When the officers at Canaveral daydream they comment that the "ultimate answer will probably come only when we have a completely integrated communications-instrumentation - d a t a processing setup—all of it on a real-time basis." (When asked how soon this might be, most optimistic answer came from one executive who pointed to the budget and snorted.)

The idea of investing in facilities and saving on programs has been carried out on a bits-and-pieces basis before. (Example: the expensive big track built at Holloman to test out Minuteman guidance although expensive itself saved "considerably" on the program.) What is frustrating AMR personnel is that they cannot seem to convince headquarters people of the soundness of translating this philosophy into standard operating procedure for the whole range. ■

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Procurement Trends

College Offers New Course On Contracts

Mississippi South College will establish in the next school year **a course on Government Contract Management.** It will cover government contract complexity, policy, and the principles of sound management; contract forms including fixed fee, cost plus fixed fee, and incentive; negotiations methods, contract statutes, invitations to bid, contract audits, contractor profits, and general contract administration. The Small Business Act will be given special attention. In announcing the new course, Paul F. Weisend, Assistant Professor of Business Administration, said that emphasis by ARMED FORCES MANAGEMENT on the importance of government contracts "aided greatly in the decision of the school to offer the new course."

Outlook Improves For Distressed Area Industries

Industries in economically depressed areas of the country can expect a sharp increase in business as a result of the order issued to the Departments of Defense and Labor and the General Services Administration by President Kennedy. The order urged a streamlining of the machinery by which government contracts are channeled to distressed areas. Kennedy said, "such action is necessarily a part of any plan to redevelop economically depressed areas of the country." This point was dwelt upon heavily during Kennedy's presidential campaign in the fall.

Solutions Sought For Questions On Army Airlift

"How much airlift is enough" is one of the more debatable questions on the Defense study agenda in connection with the military posture reappraisal directed by President Kennedy in his State of the Union message. Among the guide lines which Pentagon planners hope will help produce a solution is the long standing goal of the Strategic Army Corps. This calls for the capability of airlifting one division a week at the rate of one battle group a day. To airlift an airborne battle group, the Army says, 95 strategic C-124 aircraft would be needed for the trip to an intermediate staging base, with 120 tactical C-120's necessary for a further airborne assault. To deploy one infantry battle group to a secure destination, 95 strategic C-124's would also be required.

Navy May Add To Sealift Capability

The question of sufficiency applies equally to sealift where the Defense reappraisal is concerned. Among the 30 new ships in the Navy's 1962 shipbuilding program are one amphibious assault ship and two amphibious transports (dock). In addition to the new ships, 22 conversions are scheduled. The 1961 program called for 20 new ships and 15 conversions. This long term modernization and replacement program, the Navy said, will provide effective responses to the challenges of any type conflict. On reappraisal, however, recommendations for construction of at least three more amphibious vessels and reactivation of some reserve transports appear likely.

AF Retaliates On Criticism From GAO

In the process of transferring administrative responsibility for a jet-engine contract in which "unusual circumstances" developed, **Air Force came up with a deficiency of $579,000.** The error was brought to the attention of Congress during a knuckle-rapping session by the General Accounting Office. Air Force's comeback: price reductions of $884,400 were negotiated.

Lockheed Let Contract For MIDAS Systems

Aerojet-General has received a contract totaling approximately $12-million from Lockheed Missiles and Space Division for additional research and development work on the Air Force MIDAS infrared sub-system. The contract calls for the company's Avionics Division to conduct an extensive reliability program, as well as fabricate and deliver an undisclosed number of prototype units.

MIDAS (Missile Defense Alarm System) is an Air Force research and development program designed to give the U.S. a military satellite system capable of detecting the launch of an aggressor ballistic missile seconds after it leaves the launch pad. Such a system will increase the 15-minute early warning of ballistic missile attack presently available to almost a half hour, the approximate time it takes an ICBM to reach its target after launch.

MIDAS satellites, using Aerojet's infrared sensing system, will detect the infrared radiation from the exhaust of ballistic missiles. This information will be telemetered instantaneously to data read-out stations on the ground. The program is being executed by the Air Force Ballistic Missiles Division.

AF Saves $5-Million Through New Program

A special materiel management improvement project called "Money Tree" was outlined in Washington last month by Lt. Gen. Mark E. Bradley, Jr., Deputy Chief of Staff for Air Force Materiel, for members of the National Security Industrial Association.

"This project embraces every command and staff agency in the Air Force," Bradley said. "Our personnel from the lowest unit upward are being made acutely aware that discipline and efficiency in materiel functions must be achieved as an order of first Air Force priority. Money Tree requires every command to establish a management improvement program at an early date and to reduce costs by holding materiel support to an effective minimum. Plans from Air Force commands for carrying out this directive were received on January 5. I expect the same disicipline and vigor in the Air Force that we are urging from industry."

Bradley noted that he will be able to report to Congress, during current FY 1962 budget hearings, the saving of more than $5-million over the past two or three years through the voluntary cooperation of defense contractors in cost reduction efforts. "These cost reductions haven't resulted in any large checks being turned into the Treasury," Bradley said, "neither have they enabled the Air Force to acquire unexpected windfalls or embark on large new programs. These reductions have merely eeked out the funds to offset wage increases, higher materiel costs, and unexpected expense on new and untried weapon systems."

The savings occurred in labor costs, from internal company cost reduction techniques, from improved purchasing methods, value engineering and control of overhead. Cost cutting effort has been reviewed over a period of several years, listing only items that could be definitely linked to dollars-and-cents reductions. The dollar total doesn't include savings effected by subcontractors, reductions related to improved management methods, or other intangibles not readily measured.

General Dynamics Leads Military Contractors

General Dynamics Corporation led the nations 100 top military prime contractors in the total value of contracts awarded during FY 1960. The firm was awarded 6% or $1.260-billion of the total of $15.410-billion awarded to the leading 100 firms, which received 73.4% of the total U.S. military contracts which came to $20.995-billion. Listing for the top 100 companies also included 118 of their subsidiary corporations.

In second place was Lockheed Aircraft with 5.1% of the total or $1.070-billion. Boeing was awarded $1.008-billion in contracts to place third with 4.8% of the total. General Electric Company is ranked in fourth place with $963-million or 4.6% of the total.

Lockheed Aircraft led defense contractors in the RDT&E field for FY 1960 with 12% of all development contracts for a total $666-million. Total value of research and testing contracts of $10,000 or more during the period was $5.532-billion. Second in FY 1959, Lockheed led the R&D list for 1960, with General Dynamics second, North American Aviation third, General Electric fourth and Western Electric fifth.

DOD Will Revise Procurement Rules

The Defense Department has informed Congress that it will revise its procurement rules in line with a recom-

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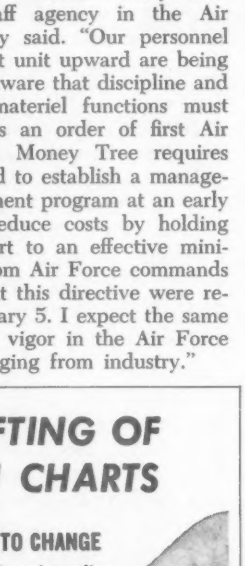

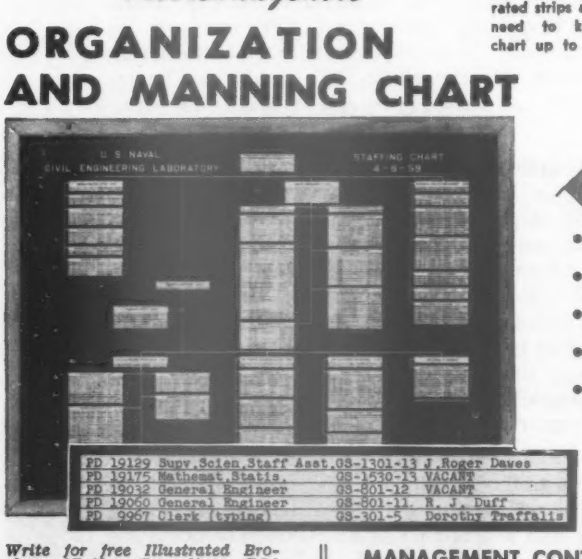
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mendation by the Senate Armed Services Committee to permit a contract officer to reduce target costs where he can reasonably show the price was based on inaccurate or out-of-date cost data. The proposed change is one of nine steps the Pentagon is taking to improve procurement techniques recommended last year by the committee. A report was sent to Chairman Strom Thurmond (D-S.C.) of the special investigating subcommittee which looked into procurement problems.

Though the target price provision is directed at incentive contracts, DOD said it believes "that the underlying purpose of a contract adjustment provision should be recognized without regard to a particular type of contract." The proposal calls for an adjustment provision in all negotiated fixed-price contracts over $100,000, unless the contract price is based mainly on price competition or established catalogue prices. It would permit the contracting officer to "equitably reduce the contract price if he determines that the cost was overstated because any contractor or first-tier subcontractor failed to disclose any significant and reasonable available cost data or furnished any data he knew or reasonably should have known was false and misleading."

AF Now Operating Surplus Sales Program

Air Force has recently completed all initial steps and begun full-scale operation of its part of the DOD Consolidated Surplus Sales Program according to Major General Frank A. Bogart of Headquarters, Air Materiel Command.

General Bogart is AMC's Director of Supply. He said initial steps included establishment of eight Air Force Consolidated Surplus Sales Offices by AMC, leading to increased efficiency and more attractive sales offerings.

About four personnel, highly specialized in selling Government surplus, have been assigned to each of the Air Materiel Command offices. Consolidation of the activities of such individuals is certain to lead to improved sales methods, General Bogart said.

The offices are located at six air materiel areas, Dayton Air Force Depot and the 2704th Aircraft Storage and Disposition Group at Davis-Monthan Air Force Base, Ariz. Air materiel areas involved are at San Antonio, Tex., Oklahoma City, Okla., Mobile, Ala., Middletown, Pa., and San Bernardino and Sacramento, Calif.

The new method is of benefit to bidders who may desire greater quantities of items than might be offered for sale at one base.

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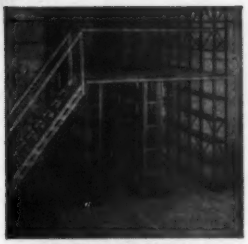

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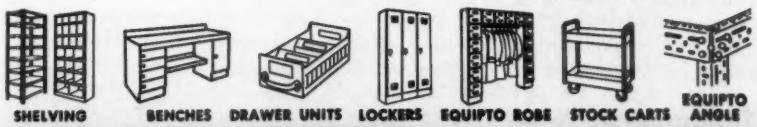

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Newsletter

Armed Forces Management Association
Washington 25, D.C. MEtropolitan 8-1071

National President: Lt. Gen. Roscoe C. Wilson, USAF Exec. Vice Pres.: VAdm. Harry E. Sears, USN, ret.

New AFMA President

It is with deep regret that we announce the resignation of The Honorable George H. Roderick, former Assistant Secretary of the Army (Financial Management), as President of the Armed Forces Management Association. His letter to the Executive Vice President explaining his resignation will be of interest to the membership: "Because my service in the Pentagon is rapidly approaching its conclusion and because my future plans call for leaving the Washington area, I feel I must regretfully resign from my office as Chairman and President of the Armed Forces Management Association.

"I have given this careful thought with the hope that this letter might not have to become a reality. However, I find it will be practically impossible for me to carry out this assignment while active in a new position in industry.

"One of the most satisfying experiences I have had in my seven years in the Pentagon has been the privilege extended me to serve as President of the Association. I have never been associated with more devoted individuals who are united in the promotion of better management in the Services, and a desire to join with industry in an interchange of ideas and better results for both the services and corporate organizations.

"Please extend my warmest regards and best wishes to the Board of Directors and the many other advisors of the Association."

Sincerely yours,
s/George H. Roderick

Succeeding Mr. Roderick as AFMA National President and Chairman of the Board of Directors is Lt. Gen. Roscoe C. Wilson, Air Force Deputy Chief of Staff (Development), who has served as vice president and vice chairman of the Association for the past year and a half. General Wilson brings to the AFMA top spot a wealth of management experience gained in over 32 years commissioned service in the Army and Air Force. A '28 graduate of West Point and a Command Pilot, General Wilson has spent many years in R&D management and nuclear programs. We are honored indeed to have such a distinguished officer heading the team, and are most grateful that he has agreed to give of his valuable time to the furtherance of AFMA programs leading to management improvement in all services, and throughout the defense establishment. General Wilson's appointment also points up an AFMA policy, insofar as it is practicable to follow it, of alternating the National presidency between distinguished civilians at the Secretarial level, and military men at the Deputy Chief of Staff/CNO level, and rotating the honor among services.

We are confident that the same fine support which favored his predecessor will be given to our new president.

Management News

It will come as good news to the dedicated AFMA membership that increased emphasis on better management is already being felt in the defense establishment. As we pointed out in last month's Newsletter, our new Chief Executive has shown a very keen interest in the need for improved management in Government. His appointment of men with excellent reputations as managers is evidence of this added emphasis. As we go to press, word has been received of the establishment, within existing facilities of the Secretary's Office, of an office of organization and management planning. This, we feel, is a great stride forward, as there has not been previously an office in OSD whose principal function is the improvement of management throughout the defense establishment. AFMA is happy at this advance, and we would like to feel that we played a part in stimulating this progress. Through spoken word and in print, we have long and urgently recommended more direction of Defense's whole management program. In addition, the Association's executives from time to time have been asked to sit in on planning conferences at the Bureau of the Budget and private institutions, whose objectives were management improvement throughout the Federal government. We hope that this is but the first significant assist to our government by the Armed Forces Management Association and its far-flung organization.

Chapter Briefs

One of the most successful meetings of the Financial Management Roundtable, a consolidated group of management minded people drawn from the membership of a number of national associations with chapters in the Washington area, was held on 31 January in the GAO auditorium.

Sponsored by the National Capital Chapter of AFMA, the meeting drew a standing room only crowd of over 300 management enthusiasts. Addressing themselves to the subject, "Organizing for Effective Use of Electronic Data Processing Methods," a distinguished group of speakers and panelists from government, industry and a local university discussed the pros and cons of various methods of arranging and systemitizing the elements of well established organizations to insure the most effective use of electronic data processing methods, and the potential impact of these methods on the personnel of these organizations.

Speakers included Mr. Robert Featherston of General Electric Corporation, and Mr. Edward Mahoney of General Accounting Office.

Panelists included Charles Phillips, OSD; Edmund D. Dwyer, Chief, Navy Management Office, and past president of AFMA; J. F. Cunningham, HQ, USAF; and Lt. Col. Hugh Foster, Chief, Data Processing Systems Division, Comptroller, Army. Moderator for the timely discussion was Dr. Lowell Hattery, Director of the Technology Center, American University.

Great Lakes—Chicago Chapter played host to the Naval Personnel Leadership Field Team, Commanders P. N. Searles and R. J. Loomis, at a dinner meeting at HQ 5th Army on 17 January. John F. Burke is President.

San Antonio Chapter honored retiring 4th Army Commander, Lt. Gen. E. T. Williams with a National Honorary Life Membership in AFMA in recognition of the wholehearted support which he has given the AFMA program, and particularly his solid backing of the local chapter. James H. Leverenz is chapter president.

Research Rundown

Take It Easy Is Advice On PERT

Too much enthusiasm (coupled with too little education) **may cripple the PERT** (Program Evaluation and Review Technique) **program**—or PEP as Air Force calls it—before the management control effort really gets off the ground. Pentagon top executives familiar with PERT details say there are indications Air Force may insist on its being adopted by its industry suppliers on a crash basis. Fear is that moving too fast may alienate industry toward "just another confusing military requirement" before really understanding how to use it correctly. Commented one of the founders of the system: "PERT is not an automatic panacea. It must be introduced into any development operation with a great deal of care and thought or it will do more harm than good."

They Call It Administrative Foot Dragging

Successful firing of the Minuteman in early February on its first try **has left most military engineer program managers walking on air.** Technical marvels (movable nozzles, guidance and computer in a single package, etc.) would be enough. What appeals most, however, is that a look at total military weapons development over the past few months shows nothing but sunshine in the technical effort. Only thing that rankles: Administration's tardiness in taking full advantage of the development breakthroughs. Example: Polaris submarines are being built at a rate less than half of the 12-boats-a-year capacity of which they are capable.

Polaris Sheds Weight, Gains Range

A contributing factor (and probably a large one) in plans **to increase the Polaris missile range** from 1200 to 2500 nautical miles, will be the lighter inertial guidance stable platform being developed by the Instrumentation Laboratory of the Massachusetts Institute of Technology—with assistance from the General Electric Ordnance Department. Weight reduction will be made possible through the use of smaller inertial components and new electronic devices.

Navy Will Save Research Funds On GERSIS

Research and development savings of $2-3 million will be realized by Navy when GERSIS (General Electric Range Safety Instrumentation System) is installed at the U.S. Naval Missile Facility, Point Arguello, Calif., later this year. GERSIS, in addition to providing further precision instrumentation capabilities to present range safety equipment, will be used to insure safety of persons and property near the Pacific Missile Range during test launchings of Atlas ICBM's—targets for Army's Nike-Zeus on Kwajalein Atoll. It will also be capable of performing a variety of related missions such as precise postflight trajectory analysis and recording of missile performance data.

Why Accept Second Best ANP System?

Nickel and dime philosophy plus Pentagon indecision may force the Defense Department finally to buy the second best system for Aircraft Nuclear Propulsion. On hand is $35-million already funded for the program, plus a possible $11-plus million allocated but not apportioned. These funds, however, are sufficient only for salaries through the month of June and it now appears likely that one or the other of the two ANP approaches—direct or indirect cycle—will have to be abandoned. It is estimated that the direct cycle approach could be ready in about 18 months, but researchers feel that the indirect system has a greater growth potential.

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Research Rundown

First Alpha-Numeric Page Reader Developed

Development of the world's first alpha-numeric, transistorized, commercial page reader for data processing has been announced by Farrington Manufacturing Company, Needham Heights, Mass.

The outgrowth of an experimental machine built for the U.S. Air Force, the advanced Farrington Optical Scanner is designed to close the information-feeding gap in data processing by eliminating the laborious manual translation of raw data into business-machine language suitable for high-speed computers and automated systems.

The Farrington page reader scans ordinary business documents and instantaneously translates the information it reads into punched paper tape at the rate of 240 characters—letters of the alphabet, numbers and punctuation marks—per second. Other Farrington machines now being built will be capable of a 340-character rate of output when magnetic tape, rather than punched paper tape, is used.

This is the first commercial reading machine to read and digest entire pages of copy. Its predecessors now in use were built to handle single lines of type—usually account numbers such as those which appear on an oil company credit card.

New "Spotter" Camera Ordered By Navy

Russian submarines and "fishing" trawlers will soon have a new cold war weapon pointed at them by Navy defense forces. Nicknamed the "Spotter," but officially known as the KE-28A, the weapon is a hand-held camera designed to collect evidence of intrusion by Russian vessels, especially those probing American radar installations and snooping at missile-firing activities.

Since subs often quickly dive from sight and scientific ships have been known to convert into innocent-appearing fishing vessels, the Navy asked for a camera sophisticated enough to capture picture evidence during dawn light, simple enough to be operated without formal training and rugged enough to be roughly handled during flights.

One thousand of the "Spotters" are being produced by Chicago Aerial Industries, Inc., Barrington, Illinois, under a large Navy contract. Lightweight for easy handling, the camera features an ultra-fast rewind mechanism allowing the pilot or observer to wind, focus, snap the photo and rewind within two seconds.

The camera is the first stage of an automatic anti-submarine warfare system under contract development for the Navy by Chicago Aerial. The entire system features automatic exposure control and picture taking and is based on missile guidance techniques for keeping cameras locked-on to submarine targets, regardless of evasive action by the sub. Details are expected to be released within 30 days.

Firestone To Continue Elastomer Program

The Firestone Tire and Rubber Company and the U.S. Air Force have signed a contract for continuation of an elastomer research program this year. The company has been working on a contract with the Air Research and Development Command's Materials Central since 1955.

Air Force is vitally interested in elastomers—natural or synthetic rubbers—that will resist high temperatures because of the extreme heat to which components in missiles and airplanes are subjected.

Emphasis has been on high temperature elastomers for such applications as airplane tires. New phases of the program will include the preparation and evaluation of new types of elastomers for possible high temperature applications, and studies of the adhesion qualities of high temperature fiber, aging of rubber under space conditions, and stress relaxation at high temperatures.

Army Engineers Test New Mapping Instrument

A new type automatic mapping instrument, designed to reduce the time required to contour aerial photographs, is being tested by the U.S. Army Engineer Geodesy, Intelligence and Mapping Research and Development Agency, Fort Belvoir, Va.

Called the "Stereomat," the instrument is a Canadian development by Hunting Associates, Limited, and is the first one in the U.S. It provides automation of the present time-consuming task of establishing contours for maps made from aerial photography. It employs photo-electric cell "flying spot" random scanning and other electronic techniques, thereby permitting faster processing of data. It is expected to contour a pair of aerial photographs faster than a human at equal accuracy.

How Naval Supply Stays on Top

Incorporation of two new systems in the Navy Aviation Supply Office will result in money savings, as well as improved logistic support.

The Navy Aviation Supply Office has been taking advantage of the latest technological advances in rapid transmission of data, mechanization of cataloging and other publication work—wherever savings of time and money could be realized.

The new procedures have been tried, evaluated, and in several cases, integrated into operating procedures as new equipment has been developed (sometimes before it is on the open market).

Recent improvements have been the adoption of Sequential Card Composition and Cataloging Wire Transmission of data. These have resulted in partial Catalog automation.

Sequential Card Composition is a card and camera system of cold type composition and preparation of negatives for photo-offset reproduction. Equipment was developed by Recordak (Listomatic) and Vari-Typer (Foto-List) Corporations and both employ an automatic camera to photograph lines of print composed by means of a special typewriter on special Electric Accounting Machine (EAM) tabulating cards.

These have been, and are currently being adapted to further uses by the Administrative Office of the Navy Department.

Aviation Supply Office, with the Bureau of Supplies and Accounts and the Navy Department Administrative Office, pioneered using this equipment in preparing printer's copy and negatives for cataloging and related publications.

Starting with the techniques for preparing the Navy Stock List, numerous sections of the Stock List of the Aviation Supply Office were converted from cold type composition to this partially automated operation.

After conversion of several such publications, Aviation Supply Office personnel extended existing techniques, and developed new ones suited to peculiarities of the Naval Aeronautical Supply Organization.

The result was adopting the Sequential Card Composition system for copy preparation on negatives for descriptive type cataloging publications. It was also used for special listings periodically issued and frequently revised by the Aviation Supply Office.

In cataloging this resulted in ability to convert the manual method of copy preparation to Sequential Card Composition at a saving of $100.

Savings were also made with publication of cumulative supplements and new editions of sections previously converted to the Sequential Card System.

From 25-40% of the previous revision cost has been, and can be, saved by the new technique. The new procedure makes it possible to do day-by-day maintenance of the master file of cards, and to publish timely supplements of revisions—eliminating much of the time lag which formerly slowed down publishing this kind of cataloging data.

A separate EAM card is typed on the Vari-Typer Line Composer (or "card writer") in accord with a prearranged format or plot. Development of this plot is a type of programming in which various features of horizontal layout are planned and coded.

This provides guide lines and rules for preparation of all subsequently typed cards for the sections concerned so they will conform to the adopted standardized lay-out.

The Vari-Typer Line Composer permits use of different type faces by changing type fonts. Vertical page lay-out is controlled by card count, either manually or by a mechanical card counter. EAM cards are color-coded and tabbed to ease lay-out, provide for wide spaces, illustrations, and folio numbers.

The final step is preparing a negative by the Foto-list camera, which rapidly photographs a single card and, thus, a single line. It automatically feeds EAM (or tabulating type) cards and records the image of the type on a continuous roll of film.

This film becomes the negative the printer prepares the photo-offset printing plate from. Such a camera, located in the Navy District Printing and Publications Office, serves numerous activities in Fourth Naval District—besides Aviation Supply Office.

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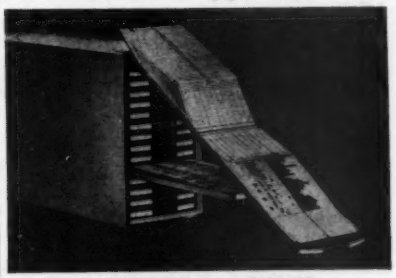

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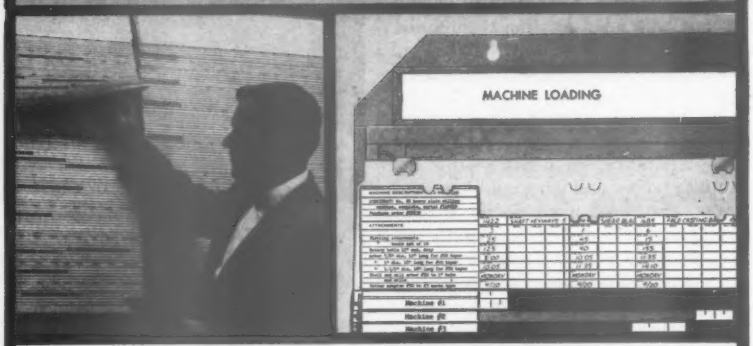

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The Catalog Data Wire Transmission was developed by cooperative action of several major American industries and Armed Forces Supply Support Center.

It will ultimately handle all transmission of cataloging data between the various submitting agencies of the Army, Navy, Air Force, and the Armed Forces Supply Support Center which assigns Federal Stock Numbers for DOD.

Basically, this system converts handwritten original cataloging identification data into an eight-column punched paper tape using a combination manual-automatic typewriter and peripheral equipment. The latter permits use of programmed master or control tapes, and the automatic selection of standardized replies.

Eight-channel paper tape is fed into an automatic transmitter-receiver which converts punched holes in the tape to electrical impulses at about 100 words per minute. These are placed on magnetic tape on a "recorded carrier" device.

At a prescribed time, a commercial long distance telephone connection is made and the message recorded on the tape is transmitted at 800 words per minute to the receiving activity.

At this point, the process is reversed, except for the fact that the eight channel punched paper tape which activates either an automatic typewriter or an automatic EAM card punch and printer, or both, depending upon predetermined coding.

This system has: (1) improved the speed of transmission of cataloging data, (2) has resulted in more rapid assignment of Federal Stock Numbers, (3) sped processing of changes and modifications, revisions and additions to the cataloging data of DOD, and (4) eliminated expensive and time consuming internal processing.

The Cataloging Data Wire Transmission system is still in the developmental stages but is expected to be used exclusively for transmission of all cataloging data throughout the continental United States and for related communication—by the end of 1960.

Further developments in this rapid wire transmission system and the Sequential Card Composition System will undoubtedly result in additional savings to taxpayers and improved logistic support for National Defense.

These are examples of modern practices now in use, under development, and under consideration. Many by-products of these advanced methods will be seen in the future. ■

Are You An Administrator?

Many take for granted administrative efforts assigned them. However, the good administrator is one who is constantly striving to discover, develop, and employ the most advanced and modern administrative methods.

by Lt. Col. Dan W. Hickox

IN the foreword of the new Air Force manual *Guide for Air Force Writing*, General LeMay advises: "One of the greatest needs facing the Air Force today is to improve the quality of our writing. It takes us too long to get our ideas down on paper, we use too many words to say what we mean, and too often our meaning is not clear. Then, because of poor writing, our readers have to waste their time trying to understand us."

These are very significant words. Equally significant are these by General Partridge when Commander-in-Chief, North American Air Defense: "In today's fast moving air defense system, as in any modern military organization, we depend to a great degree on oral presentations. The importance of being able to express yourself clearly, concisely and logically cannot be overemphasized."

The Administrator

These statements refer to written and oral communications. Equal concern could well be expressed to the total administration area, of which effective writing and speaking are major components.

Looking at the Air Force, one can note that the great bulk of its headquarters, operations-oriented though they are, are essentially involved in administration.

As administrators, rather than operators, they attend meetings and conferences; make oral presentations; telephone; write messages, letters and directives; go on TDY where they speak with others. Generally speaking, these are the higher paid people of the Air Force. The quality of their administrative work has far-reaching effects on operational capability.

In their constant zeal to improve operational capability, these administrators have overlooked the operational significance of administrative capability. Although recent years have seen some improvements in administrative processes, these improvements have lagged far behind quantum gains in technology and operational hardware. One area for concern: achievement of a major breakthrough.

Each headquarters has an administrative services chief—descended from the adjutant—who is normally responsible for a variety of administrative efforts, *i.e.* correspondence, postal, records, forms, reproduction, library. Traditionally, these efforts are taken for granted; are often performed passively. Yet, unglamorous as they are, they provide the basic administration mechanism. To make the administrative function dynamically progressive, first have the administrative services charter show the chief as vice president in charge of administration for the entire headquarters. Emphasize that his primary job is to discover, develop and employ the most advanced and modern administrative methods.

He should challenge all traditional methods used in the headquarters, including those self-generated, as well as those directed by statute or higher headquarters. He should question all record-keeping, communicating and record handling with a view to reducing any clutter inherited over the years. Also included in the expanded function should be researching, developing, testing and evaluating administrative hardware and advising the staff on its worthwhile application.

Having strengthened the administrative services charter, next step is to establish a progressive attitude toward administration throughout the Air Force. Viewed by some now as a necessary evil, its importance to greater operational capability should be recognized—it should become a necessary tool.

Finally, execute a concerted program to energize and enhance Air Force administrative efforts at all organizational levels. Much has been accomplished from the Air Staff level.

At this point, a commander of any organization might say: "I buy this concept but what's the best way for me to get it going?"

What It Takes . . .

As with so many other work efforts, the first major action is to assure that you have the right man for the job. This man should be:

a. Imbued with the understanding that administration exists to serve, not to control.

b. Schooled in and sold on the principles of effective communication espoused by the Air Force.

c. Impatient with the notion that certain methods are best simply because they are "tried and true."

Having such an officer, the commander need only to give his efforts continuing, strong support, particularly in his experiment with radical, tradition shattering ideas. As in so many other areas of effort, the force of the commander's interest is paramount.

Such a program to energize and enhance Air Force administrative proficiency will result in greater operational capability. ■

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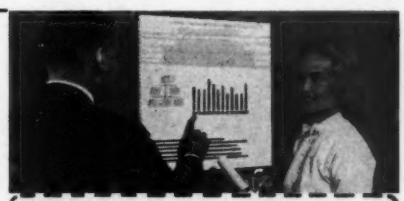

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Need for Dynamic Leadership

As new weapon systems become operational in the new Pentomic Army, accomplishment of a dynamic leadership program is considered essential.

by 1st Lt. W. C. Rousse

VIGOROUS emphasis is being placed upon development of more advanced weapon systems in the new Pentomic Army. At the same time, planners seek a solution to such pointed questions as: "Where should these weapons be placed to achieve maximum utilization and maximum efficiency in tactical operations?" "What level of command should exercise tactical control?" or "How will subordinates react to the concepts of 'controlled dispersion' and 'independent action' in normal operations?"

These and many other such questions point to the absolute requirement of developing a dynamic leadership program that will ensure combat success in any future conflict, be it little or worldwide.

However, there appears to be inconsistency in leadership practices that suppress the recognized attributes of dynamic leadership. This is not confined to any specific branch or rank, but may be found in a greater or lesser degree anywhere. A basic tenet of military education is the accomplishment of an assigned mission above all else.

One may ask himself, "Am I providing my subordinate leader with the 'tools' necessary to accomplish his mission in combat?" Inventorying these "tools" necessary for success in combat, immediately recognizable is the ability to act with decisiveness and complete confidence after first weighing alternate courses of action.

The stimulus that fosters this action in men becomes quite evident if one studies the reaction of a subordinate after receiving a mission type order. Subordinate leaders are instructed as to what they must accomplish and not how they are to accomplish a given task. To compare this method with the one that is increasing at an alarming pace, one needs only watch the reaction of a subordinate who is told how to accomplish a task— even to the exclusion of all individual initiative.

In giving a mission type assignment, a commander often unknowingly displays a foundation of confidence upon which the subordinate will build responsible self-reliance. Many times commanders will compromise this display of confidence in subordinates by freely giving unsolicited "advice," "guidance" or "implementing instructions" to such a degree that the subordinate leader likens his responsibility to that of a messenger.

The Tools

There are perhaps many cogent reasons why commanders at all levels feel it necessary to provide extensive guidance to subordinate leaders. However, this does nothing to alter the fact that they are guilty of suppressing initiative, self-confidence and their ability to select from differing courses of action. These very traits are "tools" which commanders at every level must possess to ensure success on the battlefield of the future.

Now, more than ever before, our entire Army must incorporate the characteristics that were attached to the cavalryman of the past. Mobility, firepower and shock-action must characterize not only present armored operations, but must become the fundamental axioms of all land warfare. Forceful application of these concepts require dynamic leadership.

Excessive interference contributes nothing to building a dynamic leadership program and is something to guard against. Many deny its existence; nevertheless, by provoking discussion, much can be gained by airing this dangerous phenomenon.

History is filled with examples of poor plans and incomplete orders attaining victory through their violent execution by dynamic leaders. Historians have recorded equally well other battles lost because of the lack of forceful leadership at a critical moment.

Lack of decisiveness in past leaders has been exposed so that others may profit from their experiences. Those who lead today must assure adequacy of those to follow. Critics, who belittle past lessons, need only look about them to recognize how often those who leap into the future land in the endless stream of history. ■

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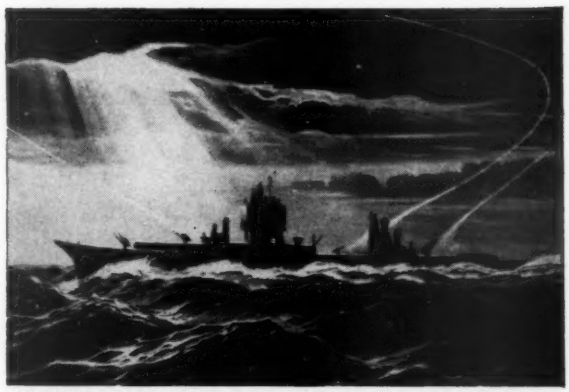

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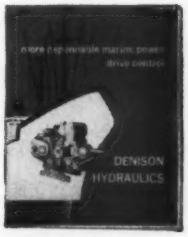

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